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## TO PROHIBIT INTERSTATE COMMERCE IN ALCOHOLIC LIQUORS IN CERTAIN CASES.

Bills of identical wording have been introduced into the U. S. Senate (S. 4043) and House of Representatives (H. R. 16214), the former by Senator Kenyon, and the latter by Representative Sheppard, both bearing the title, "A Bill to Prohibit Interstate Commerce in Intoxicating Liquors in Certain Cases."

By picking the bill, or bills, to pieces we discover the following features: If enacted the law will prohibit,

1. The shipment or transportation in any manner whatsoever
2. From any State, Territory or U. S. District, or place subject to the jurisdiction thereof, or from any foreign country;
3. Into any State, Territory, U. S. District or place subject to the jurisdiction thereof
4. Of any spirituous, vinous, malted, fermented or other intoxicating liquors of any kind:
5. When said intoxicating liquor is *intended*
6. By any person interested therein, directly or indirectly, or in any manner connected with the transaction,
7. To be received, possessed or kept, or in any manner used, either in the original package or otherwise,
8. In violation of any law enacted in exercise of the police powers of the state, etc., into which the shipment is made.
9. All contracts pertaining to such transactions are declared null and void, and

no suit or action shall be maintained in any court of the United States for the enforcement or protection of any alleged right based upon such contracts.

10. It is declared that there shall be no property right in or to such liquors while in the possession of any common carrier in connection with any transportation thereof in violation of the act.

There is no specific penalty provided for violation of the act, unless deprivation of the right to sue upon contracts connected therewith, and the loss of property right in the liquors while under transportation be regarded as such.

It will be observed that the prohibition extends to the shipment of alcoholic liquors only when they are "intended" to be used in violation of the law of the State, etc., into which they are shipped.

It is a question, though, whether the language "intended by any person interested therein, directly or indirectly, or in any manner connected with the transaction," is not so broad as to be capable of working hardship in some cases. For example, suppose a booze selling druggist orders from his jobber, in connection with other drugs, some ethyl alcohol, brandy, port or sherry, intending to dispose of them in violation of local law, would not the pleading of his intent enable him to defeat the jobber from recovering either for the liquors or for the entire bill of goods, since the latter were a part of the transaction?

Undoubtedly the intention of the people behind the bill is to have it apply only to alcoholic liquors when unlawfully sold to be used for beverage purposes. Whether or not this will be the *effect* of the act will depend upon the construction which the courts may place upon its language. If there is any possible ambiguity in its provisions, it should be corrected now.

The drug interests do not use the expensive ethyl alcohol because they desire to do so, but because of the fact that science has as yet failed to discover any substance which can be entirely substituted for it in manufacturing chemistry and pharmacy. They would cheerfully abandon its use if it were possible to do so, but they have the right to demand that its legitimate use shall not be hampered by unduly oppressive restrictions because of its illegal use by other interests.

The enactment of the bills is being pressed by the National Temperance Bureau, representing the Anti-Saloon League of America and other national temperance organizations. The writer has on numerous occasions been brought into personal contact with the chief officers of the Anti-Saloon League, and has always found them ready to listen to argument. They are reasonable men and understand the peculiar situation of the druggist with regard to the use and sale of alcohol and of alcoholic liquors.

If it is considered that any legitimate drug interest would be unduly hampered by the passage of this act in its present form, these officials should be applied to directly for a proper change in its provisions. J. H. BEAL.

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## OLD TIME METHODS IN PHARMACY.

"There is no money in the drug business any more," says the old time druggist. To be sure there is not, if the business is conducted in the old time way: nor for that matter, is there any money in any other kind of business if conducted according to the customs of long ago. B. C. business methods won't attract Anno Domini customers.

The ancient pharmacy, with its old-fashioned tincture presses, macerating jars, and mortars big enough for a baby's bath tub, has shattered into a thousand pieces on the flagstones of commercialism, and like that celebrated character of the nursery rhyme, all of Uncle Sam's cavalry and infantry (alias the king's horses and men) can never stick this particular Humpty together again.

The wonder is that any one should expect the drug business to prove an exception to the general rule, and to remain unchanged in an age when all things else, physical and metaphysical, are in a state of flux.

Because the so-called professional features of the older pharmacy have passed away it does not follow, as sometimes argued, that modern pharmacy does not possess professional possibilities. What it does mean is that the crude processes of the old time apothecary have been superseded by more refined methods, that the old products of doubtful strength and composition have been replaced by products of definite strength and certain composition, and that the rule of thumb has given way to the rule of the balance and the burette.

Where the pharmacist has failed is in the lamentable fact that, unlike the physician and chemist, he has not sufficiently availed himself of the means of improvement afforded by his professional associations and the technical journals devoted to the cultivation of his art, and thus has fallen relatively behind these two sister professions.

The professional *possibilities* of pharmacy are greater today than ever before, but the rewards are for the industrious and progressive, and not for the slothful and careless.

The great thing lacking is a *general* disposition on the part of pharmacists to discover and develop these possibilities, and thus keep their art in even line with the developments in other arts and professions.

Develop or die is the law of progress. The judgments of economic law are harsh, and their sentences are without the quality of mercy, punishing those who err through ignorance with no less a penalty than those who are guilty of wilful violation.

Some men are like certain plants that when introduced into new climates and soil flourish beyond any point possible in their original environment, while others are so far lacking in adaptability that when conditions change they begin to lose out.

That there is still money to be made in the drug business when conducted according to modern business methods is attested by the example of thousands who have been successful in a measure never dreamed of by the old time apothecary.

In its commercial aspects the new pharmacy differs more widely from the old than it does professionally. This is because the age is distinctively a commercial one, and because every branch of trade which pharmacy touches upon has made tremendouse strides in the art of exchanging articles of merchandise for units of U. S. circulating medium.

It is doubtless true, that the qualities which make a man successful commercially are different from those which make him a high type of professional man, but the two qualities are not necessarily antagonistic. The reason they are not commonly both highly developed in the same man, is because the complete develop-

ment of either alone requires about all of the energy and capacity that nature usually allots to one individual.

The writer can recall the time when he was obsessed with the idea that the men who did the largest drug business did so by virtue of selling inferior drugs, but on investigation he found that, as a rule, the men of large business handled the very best of drugs. This, after all, was a very reasonable thing to expect, because such men are good business men, and it is not good business to sell poor drugs.

The remedies for failing business are as numerous as astringents and purgatives in the U. S. P., and while some may be better in certain respects than others, there are a few general remedies that are applicable in nearly all cases.

One of these is that the losing out druggist must first thoroughly realize that his failure is due to some fault or mistake of his own, and not to "times out of joint," nor to the sins of humanity in general

When the foregoing remedy has had its full effect and has purged him of his self-sufficiency, he must investigate the methods of other men who have made a success of the drug business under circumstances similar to his own, and then apply the same methods to his own business.

It would carry us too far afield to go into particulars and describe all of the details made use of by successful pharmacists, but it will serve the purpose in mind when this article was begun to mention one of them, and that is this:

Nearly all of the pushing, successful men in pharmacy are active association men. They are members of the A. Ph. A., and if retailers, of the N. A. R. D., and of their local association. They either attend the meetings of these associations, or they read their proceedings carefully, and they also read one or more good independent drug journals.

By these means they are brought into contact with the best minds in pharmacy. They not only learn new things directly, but their own minds are stimulated by their contact with others and they evolve new methods and expedients that would never occur to the druggist who pursues a hermit-like existence, and who fancies that he is saving money by not paying association dues, or that he is saving time by not reading the drug journals.

Whether the successful pharmacist is successful because he is an association man, or is an association man because he is successful, or whether both are due to the fact that he is a man of brains and capacity, one thing is fairly certain—the connection is causal and fundamental and not accidental. J. H. BEAL.

# Contributed and Selected

## SOME SUGGESTED MODIFICATIONS OF THE PHARMACOPŒIA METHOD FOR THE ASSAY OF BELLADONNA LEAVES.[1]

ARTHUR F. SIEVERS.

The present Pharmacopœia method for the assay of mydriatic alkaloids, while very practical in principle, has several defects in the details of its manipulation which could be easily remedied and which would add much to the accuracy of the method in the hands of the average analyst. In a previous article[2] the writer described the use of a separatory funnel for both macerating and percolating the drug, thus doing away with the cumbersome and tedious operation of transferring the marc from a flask to a percolator. This transfer of the drug is undoubtedly one of the principal sources of error, especially when in the hands of an inexperienced analyst. The writer has used the long, narrow, Squibbs separatory funnel in hundreds of assays and has found it admirably adapted to the work.

It is desired in this article to draw special attention to the question of menstruum. The amount specified in the present Pharmacopœia is not sufficient to exhaust the drug completely except perhaps with exceedingly slow and careful percolation. It has been found by experience that the maceration liquid does not extract the bulk of the alkaloids as would be expected but that a large quantity is extracted by the percolation. In view of this fact it is essential that the percolation be very thorough and the quantity of menstruum specified in the official method is not sufficient to assure complete exhaustion in the majority of cases.

During the course of some studies on the cultivation of belladonna the writer found it necessary to devise an assay method which would be applicable to very small samples of drug. It was frequently necessary to work on quantities as small as two grams, while the maximum was never more than five grams. The Pharmacopœia method was followed in principal but several modifications were introduced. In order to insure complete exhaustion of the drug a large amount of menstruum was used, the amount decided upon being 50 cc. for maceration for a sample of drug weighing between two and five grams and 60 cc. for the percolation. This is slightly more menstruum than is specified for 10 grams of drug in the official method. The amount of ammonia water used in the extraction was in the proportion of 1 cc. to every gram of drug used. This is about twice the amount used in the official method and was selected because it causes the proper agglutination of the drug and also insures the presence of sufficient alkalinity in samples which contain far above the average percentage of alkaloids. The shaking out process with acidulated water and later with chloroform was used as in the official method. In titrating hematoxylin was used as indicator.

The following table shows the amount of menstruum and ammonia water used

[1]Published by permission of the Secretary of Agriculture.
[2]Merck's Report, August, 1910, p. 215.

in the extraction and the percentage of alkaloids found in a sample of Belladonna leaves and a sample *Datura Tatula* leaves.

| DRUG. | Weight of Sample (grams). | Amount of Menstruum (c.c.) | | Amount of Ammonia Water (cc.) | Percentage Total Alkaloids. |
|---|---|---|---|---|---|
| | | Maceration. | Percolation. | | |
| Belladonna Leaves | 5 | 50 | 60 | 5 | 0.623 |
| | 4 | 50 | 60 | 4 | 0.621 |
| | 3 | 50 | 60 | 3 | 0.618 |
| | 2 | 50 | 60 | 2 | 0.621 |
| Datura Tatula Leaves | 5 | 50 | 60 | 5 | 0.481 |
| | 4 | 50 | 60 | 4 | 0.481 |
| | 3 | 50 | 60 | 3 | 0.490 |
| | 2 | 50 | 60 | 2 | 0.488 |

The above table shows that the method as modified is well adapted to assaying small samples. While the amount of menstruum used is probably considerably larger than actually necessary to insure complete exhaustion there is no harm in such excess and it is a very convenient quantity to work with. The menstruum can readily be recovered and by means of its specific gravity adjusted to its proper proportion of ether and chloroform so that it may be used indefinitely.

The method described has been used with equal success on Belladonna Root and Stramonium Leaves. When used on Hyoscyamus Herb, the proportion of ammonia water could no doubt be reduced considerably although the method has given very good and concordant results without any modification.

In view of what has been written it would seem then that the official process could be improved by the following several changes:

1. The introduction of a suitable vessel or apparatus such as a Squibb separatory funnel for the combined maceration and percolation. This would save time and insure against loss of material through transference to a percolator.

2. An increase in the quantity of menstruum both for maceration and percolation. This would insure a more thorough exhaustion.

3. An increase in the quantity of ammonia water used, when extracting the drug. This would aid in the complete liberation of the alkaloids from their salts.

BUREAU OF PLANT INDUSTRY,
U. S. Department of Agriculture.

## THE PHARMACOPŒIAL REQUIREMENTS FOR CANNABIS SATIVA.*

H. C. HAMILTON.

The United States Pharmacopœia, Eighth Revision, specifies that *"Cannabis Indica* shall consist of the dried prepared tops of the pistillate plant of *Cannabis sativa,* grown in the East Indies and gathered while the fruits are yet undeveloped,

*Presented to the Division of Pharmaceutical Chemistry of the American Chemical Society.

and carrying the whole of their natural resin." Cannabis Indica, that is, Indian grown *Cannabis sativa,* has been considered to be a distinct variety, or to owe its activity to differences in the soil and climate of India, from that of other localities. A statement in the National Standard Dispensatory, under the head of Cannabis Indica, is as follows: "The rich soil, and cool climate, suitable for the production of hemp fibre, will not develop the medicinal properties, which, moreover, are largely sacrificed by allowing the male plant to grow near as a requisite for the production of hemp seed. Notwithstanding this fact, large quantities of tops of such plants are marketed for medicinal use, this to a great extent explaining the weak action of much of the medicine."

Various investigators have examined American hemp, which is grown almost entirely for its fibre and seed, and obtained results which indicate that the influence of soil and climate does not affect the quality of the extract. The results obtained by H. C. Wood (Proc. Am. Phil. Soc., Vol. XI, p. 226) are responsible for its having been made official in the Pharmacopœia of 1880. *Cannabis Americana* appears in this Sixth Revision with the description *"Cannabis sativa,* grown in the Southern States and collected while flowering." Wood examined the leaves and tops of the staminate plant and found the extract to possess a high degree of activity. The American variety, however, was dropped from the Seventh Edition of the U. S. P. and does not appear in the Eighth.

Later a more exhaustive investigation was made by Houghton and Hamilton (Am. Jour. of Pharmacy, Jan., 1908). The authors described in detail, the method employed to standardize these extracts and gave the results obtained from tests of eight samples grown in various localities in America. It was concluded from these experiments that *"Cannabis sativa,* when grown in various localities of the U. S. and Mexico is found to be fully as active as the best imported Indian grown *Cannabis sativa."* No part of the plant, of either the pistillate or staminate, was found inactive, except the stems and seeds and at no stage in its growth, from the flowering to the fruiting, was there any difference in the quality of the extract. It was determined, however, that the flowering top of the pistillate plant contained the highest percentage of active extractive matter.

The acivity of American grown hemp has been noted also by True and Klugh (Proc. A. Ph. A., 1909). (See also Am. Jour. Pharm., Jan., 1912, page 31.) Their work, however, was more in the direction of obtaining a drug duplicating in appearance the imported article although they record the fact that the physiological effect on dogs was fully equal to that of the latter.

From time to time there has been obtained further evidence pointing to the necessity for specifications, which would insure that the drug so characterized is active and also that no drug having physiological activity should be rejected because of non-essential characteristics. Among these may be noted a few which suffice for illustration. From a sample of American hemp from the Continental Fibre Company of Kentucky the following data was obtained: The sample consisted largely of leaves with approximately 10% of tops. The yield of active extract soluble in cold alcohol was 8 per cent. From 15 grams of the selected fruiting or flowering tops there was separated 5½ grams or over 30 per cent of seeds. The yield of active extract from these tops deprived of their seeds was 13 per cent.

Two samples of hemp from another locality in Kentucky were examined and found to have 3½ and 8 per cent respectively, of active extract. The low yield of the former was on account of its high content of stems and the small percentage of flowering tops.

From the flowering tops, stems and leaves of the pistillate plant of some hemp grown experimentally in Michigan, a yield of 10 per cent of active extract was obtained. This sample, carefully separated into its component parts, was extracted and tested physiologically. From the tops a yield of 12 per cent active extract was obtained while from the leaves the yield was 10 per cent of an extract equally active. The higher yield from the tops was sufficient to compensate for the presence of the short stems which contain no extractive.

The American grown hemp is not alone in being gathered in the fruiting instead of the flowering stage. A sample of *Gauza Tops* from India recently submitted by a German importer contained 50 per cent of seeds. The tops entirely freed from seeds contained 16 per cent of active extractive, but the net yield from the sample as submitted was considerably below the average. Samples containing 25 per cent of seeds are very common.

A further statement is made in the N. S. Dispensatory of 1900, that "it is most unfortunate, in the case of such a drug, that we have no means of establishing a chemical standard, since the active constituent is not known. Large manufacturing houses are able to improve the standard very greatly by employing physiological examination." It is a well known fact that much of the *Cannabis Indica* which is sold on the market does not meet the requirements of the Pharmacopœia, because it contains too large a proportion of ripe, or well developed seed. For that reason it is almost impossible for manufacturers to obtain any considerable quantity of crude drug, which meets the requirements of the Pharmacopœia. It therefore seems advisable that some means be taken to establish a standard, either chemical or physiological, which shall specify in no uncertain terms, what quality of *Cannabis sativa* will meet the requirements and make a physiologically active extract. The specifications should be of such a character that no drug containing a fair percentage of active extract need be rejected because of not meeting the U. S. P. requirements.

Since *Cannabis sativa,* grown in different localities, differs not at all in the quality of its active extract and since the leaves and the fruiting, as well as the flowering tops contain this active extract, there seems to be a physical basis on which, along with a physiological test, such a specification can be made.

The fact that little, if any, truly pharmacopœial hemp appears on the market was noted by Pearson (Bull. Am. Pharm. Assn., October, 1910). Various opinions were received from prominent pharmacists and teachers of pharmacy in response to a request from him with no considerable agreement among themselves. This lack of agreement made it more than ever evident that a reform in this particular is very desirable. The subject was referred to the writer, who in response to a request for a statement which would, in his opinion, cover the points in question, gave the following, which was published in the Bulletin of the American Pharmaceutical Association of January, 1911:

"Since almost every sample of *Cannabis sativa,* whether grown in India, the United States, or any other country, almost invariably contains seeds, and since

these samples vary greatly in the amount of alcohol soluble extractive matter contained, the following specifications seem to be that which would insure a drug of standard quality.

"That the yield of solid extract *Cannabis sativa* be not less than 9 per cent and that this solid extract be entirely soluble in cold alcohol. 0.1 gram of this extract should produce the typical effect of the drug on a 10 kilo dog. The dog should be one which reacts to this drug and the effect noted is that of incoördination in its movements.

"The reasons for this specification are that almost any part, either the flowering top, the fruiting top or the leaf and either the male or the female plant, contains the active extract, but in quantities considerably different from the percentage found in that specified by the Pharmacopœia. When the top of the female plant contains a considerable quantity of seeds the percentage of extractive matter is lowered, but the activity of that extract is no less than from tops which have been gathered earlier in the season.

"The yield of extractive answering the above requirements is greater, usually, in the drug imported from India than from American grown hemp, and should be valued higher on that account. Occasionally drug which has been improperly dried or stored will be found inactive, although the percentage of extractive matter and its appearance may be no different from that which has its full activity."

The foregoing was written hastily and largely from the point of view of a pharmacologist. However, the extract, soluble in cold 95% alcohol, rarely fails to produce its typical effect on dogs. A pharmacist can readily make such an extract and thus be in a position to assay his own drug. With the additional knowledge regarding the relative amounts of extract contained in different parts of the plant, he is then in a position to make a rough choice among the samples submitted.

To the manufacturer the specification is even more satisfactory. He can purchase his drug on the basis of its yield of extract of standard quality regardless of the presence of parts which contain no activity.

If the drug contains an average of ten to twelve per cent of extractive matter of the desired quality, it then meets the specifications, while if the yield is low a proportionately larger amount of drug must be used to make a galenical preparation of standard quality.

Such a specification also opens the door to *Cannabis Americana* or in general to *Cannabis sativa,* since yield and activity are the essential features of the specification.

With further reference to the statement in the Dispensatory, relative to our inability to establish a chemical standard, it may be said, that although no well defined compound has been isolated, an extract has been prepared which represents apparently the nearest approach to such a constituent. There is reason to believe that the active constituent is of such a nature as to resist combination with reagents, and so to obtain crystalline compounds of a definite character.

Experiments along these lines will form the basis for a further contribution on the chemistry of *Cannabis sativa.*—(From the Research Laboratory of Parke, Davis & Co., Detroit, Mich.)

# NOTES ON CHEMICAL TESTS OF THE UNITED STATES PHARMACOPŒIA.

CARL E. SMITH.
(Analytical Laboratory of Powers-Weightman-Rosengarten Company.)

Changes in industrial conditions, improvements in manufacturing and analytical methods, and experience of many analysts with the tests of the U. S. P., 8th revision, since its publication in 1905, have brought to light various deficiencies in standards and methods. Some errors and inaccuracies have been carried over from one edition to another, merely because attention was not drawn to them, owing to a former general lack of interest in U. S. P. standards. The comments here presented are in part results and experiences of the writer and his co-workers, in part quotations from the published literature on the subject. Many observations in these notes will be found superfluous and obvious by those having ample chemical knowledge and practical experience, but it is hoped that they will be of some use to others having more limited experience in this branch of analysis. In many instances it will be found that the observations made coincide with those of others engaged in the same field, but it has not been found practicable to acknowledge priority in every case among a considerable number of subjects, as this would have required a complete search of the literature, which could not be done for lack of time. Any injustice that may have been done any one in this respect, is unintentional and, it is hoped, will be so regarded.

The writer takes pleasure in acknowledging his indebtedness to Dr. George D. Rosengarten for facilities kindly placed at his disposal and to Mr. Joseph Rosin, of this laboratory, for much of the information given in the following pages.

## GENERAL METHODS.

SELECTIONS OF SAMPLES.—While directions concerning this subject may be beyond the scope of a Pharmacopœia, this matter is decidedly of practical importance in connection with the examination of medicinal substances. Disputes have often been caused by a lack of proper methods in sampling. The following is abstracted from *Lunge's Chemisch-Technische Untersuchungsmethoden*, 5th ed., vol. I, pp. 8-22: Selection of representative samples is most difficult with materials in a coarse state of division, when not homogeneous in composition. In such cases care must be exercised that a due proportion of fine and coarse particles is taken and that materials that readily lose or absorb moisture are not exposed to the air longer than necessary. It is often advisable to take large samples from different parts of a consignment, reduce the entire sample to a moderately fine state of division, mix well, and take a smaller sample from this for analysis. The containers should be of such material that changes in or contamination of the samples is prevented. They should have well-fitting stoppers. Substances affected by light should be placed in containers impervious to light. Glass of dark amber color is often sufficient, in other cases a covering of heavy dark paper is required in addition. Sampling of liquids is comparatively simple. Semi-solids, if not perfectly homogeneous, should be thoroughly stirred before a sample

is taken. The analyst should mix thoroughly samples received of solid or semi-liquid materials before taking out any portion of them for analysis.

SPECIFIC GRAVITY.—The specific gravity data given in the U. S. P. are usually based on weights taken in air with brass weights. The data in some of the tables are corrected to a vacuum basis. The difference, however, is too small to be of importance in ordinary practical work. For liquids a pyknometer is always preferable when any degree of precision is required. For general laboratory use the Squibb pyknometer has been found more suitable than any other. Descriptions of it may be found in *Remington's Practice of Pharmacy* and in *Allen's Commercial Organic Analysis*. For an illustration of its use see SPECIAL PART, under *Aether*. The removable neck makes it eminently suitable for viscid liquids, as well. The average Mohr-Westphal balance is less accurate, not always trustworthy to the third decimal place, and the same may be said of most hydrometers.

SOLUBILITY.—Solubility determinations of solid chemical substances in various liquids are sometimes important aids in establishing purity, when other methods are insufficient, but it is well known that results vary greatly with the methods used. No instructions are given in the U. S. P. nor in most other pharmacopœias. The Swiss Pharmacopœia gives instructions as follows: The substance, in fine powder, is shaken from one-half to one hour at 40° to 50° with a quantity of the solvent insufficient for complete solution and the mixture then cooled to 15°, with constant shaking. The quantity of dissolved substance is determined in the clear liquid either by evaporating a weighed quantity and weighing the residue, by taking the specific gravity of the solution, or by other suitable analytical methods.—This method has the disadvantage that often a supersaturated solution is obtained unless allowed to stand at the standard temperature an unreasonably long time. Another source of error lies in the employment of an excess of the solute. If this contain a considerable amount of soluble impurities and a decided excess be taken, a disproportionate amount of the impurities may be dissolved and the solubility be thus found too great. The more accurate methods, however, require special apparatus not found in the average laboratory and too much time. For an approximate determination, exact enough for many purposes, the substance is passed through a silk sieve (about 50 meshes to the linear cm.), a weighed quantity is shaken with an insufficient amount of the solvent (measured or weighed) for a few hours, then small quantities of the solvent are added from time to time until solution is complete.—For an elaborate study of this subject by Atherton Seidell, the reader is referred to *Hygienic Laboratory Bulletin No. 67* (1910).

MELTING POINT.—No official method for melting point determinations is given in the U. S. P. That greatly divergent results are obtained by different methods is well known. For a detailed study of this subject by George A. Menge, see *Hygienic Laboratory Bulletin No. 70* (1910). The capillary tube method, as applied to organic and some inorganic chemicals in powder form, is too well known to call for a description here.—*Drying of Sample.* To prepare the substance to be tested, directions are frequently given,—e. g., by the German, Austrian, and Swiss Pharmacopœias, that the fine powder be dried uniformly for at least 24 hours in a desiccator containing sulphuric acid. This will cause discrep-

ancies with substances containing crystal-water that do not yield their water readily at ordinary temperatures. With compounds containing no crystal-water the rate of desiccation varies greatly also; very hygroscopic compounds may require much longer than 24 hours, while others may be dried in this manner in a much shorter time. A better practice would be to continue the drying until a constant weight is reached. In laboratory practice a saving of time is often important and it is then preferable to dry the powder (sifted through silk having about 40 meshes to the linear cm., as advocated by Menge) at an elevated temperature, low enough to prevent other changes, such as fusion, partial volatilization, or decomposition. Compounds containing crystal-water in some cases can not be rendered anhydrous by heat without some decomposition, unless it be done in a vacuum dryer. As many anhydrous compounds absorb water from the air more rapidly than is usually appreciated, suitable precautions to prevent this absorption should, of course, be taken.—*Charging the Tube.* As a result of experiments, Menge recommends that the inside diameter of the capillary tubes be not less than 0.8 mm. and not more than 1.25 mm. The interior of them should be kept clean and dry, preferably by sealing both ends immediately after drawing them out and dividing them into the required lengths or by keeping the supply, open at one end, in a desicator. The charge of sample, when tapped down, should form a solid column in the bottom of the tube not less than 2.5 mm. nor more than 3.5 mm. high.—*Thermometers.* Menge recommends a set of three standardized thermometers, about 30 cm. long, ranging, respectively, from —10° to 150°, 100° to 250°, and 200° to 350°. Since all pharmacopœial substances, for which melting point determinations are of value, melt below 260°, a set of two or three, covering a total range of about—10° to 260°, would answer. The Anschuetz thermometers, sold in sets of seven or less, are still better adapted to this purpose, having the advantage of obviating the need of emergent stem corrections, when a suitable bath is used. They are 12.5 to 15 cm. long and each one covers a range of about 60°.—*Baths.* Immersion of the capillary tube and thermometer directly into a liquid bath is by many considered preferable to the use of an air-bath surrounded by a liquid. The latter, however, has decided advantages and if generally adopted as a standard method, would answer equally well for pharmacopœial tests, as regards accuracy. The objections raised against the air-bath, aside from an alleged tendency to give too high results, are the difficulty of construction by the analyst and the cost when purchased (the cost of a Roth apparatus is $1.80). An apparatus similar to that of Anschuetz and Schultz may be made from a small round-bottom flask having a rather long neck, and wide enough for insertion of a test-tube of 15 mm. diameter. The height of the test-tube is adjusted by means of a ring cut from thick rubber-tubing, which is fitted around the tube and rests upon the flared neck of the flask. The flask is two-thirds filled with sulphuric acid and rests upon wire-gauze. A long test-tube inverted over the stem of the thermometer makes emergent stem corrections unnecessary for low melting substances. An apparatus so constructed has been used with satisfactory results for years. Comparing the results obtained by using a Roth air-bath apparatus with those obtained by using liquid baths, upon 6 compounds, Menge found differences of from 0° to 0.6° only. Advantages that may be

claimed for the air-bath are (1) that no fumes from a liquid bath can enter into the capillary tube and affect the melting point, (2) that no stirring is required, (3) that one outer bath, sulphuric acid, is sufficient for all purposes, (4) that no emergent stem corrections are needed when short thermometers are used.—Menge advocates for a bath a round-bottom, straight glass tube of 30 mm. internal diameter and about 100 mm. long, containing sulphuric acid for ordinary use or cotton-seed oil for higher temperatures.—*Rate of Heating.* Menge recommends a uniform rate of heating of 3° per minute from 25° below the expected melting point until melting begins and a rate of 0.5° per minute during the melting interval. The importance of a uniform rate of heating cannot be overestimated, as no other factor influences the results so much as this.—*Reading of Melting Point.* The temperature at which the substance begins to melt should be recorded as well as that at which it is just completely melted, a narrow melting interval indicating a higher degree of purity than a wide interval.—*Correction.*. Corrections for the lower temperature of that portion of the mercury thread, which is above the bath, should always be made. The formula of Kopp, given below, indicates the number of degrees centigrade to be added to the observed melting point:

Correction = 0.000154 N(T—t)

T = observed melting point; N = length of emergent thread of mercury above the bath in degrees Centigrade; t = mean temperature of emergent mercury-thread, measured by a small auxiliary thermometer the bulb of which is placed midway between the surface of the bath and the top of the mercury-thread of the main thermometer.—To illustrate the corrections required at different temperatures for thermometers of varying construction, Menge gives the following figures for two thermometers tested by him with use of a sulphuric acid bath, No. 1 being 300 mm. long and graduated from—6° to 406°, No. 2, about 310 mm. long and graduated from—10° to 263°.

| Temperature of bath | 80° | 100° | 120° | 140° | 160° | 180° | 200° |
|---|---|---|---|---|---|---|---|
| Correction for No. 1 | 0.43 | 0.54 | 0.90 | 1.38 | 1.97 | 2.63 | 3.39 |
| Correction for No. 2 | 0.48 | 0.85 | 1.33 | 1.91 | 2.57 | 3.36 | 4.22 |

*Melting Point of Fats.*—The German Pharmacopœia gives the following directions: The melted fat is drawn into a tube of thin glass having an internal diameter of 0.5 to 1 mm., bent in U-form, in such manner that the fat forms an equally high column in each side of the tube. It is then kept for two hours on ice or for 24 hours at 10°. When attached to a suitable thermometer so that the fat is at the same height as the bulb, it is immersed into a test-tube of about 30 mm. diameter, containing a mixture of equal parts of glycerin and water. The upper open ends of the tube must be above the surface of the liquid. The bath is warmed very gradually. The temperature at which the fat becomes entirely clear is considered the melting point. The writer prefers this method with the addition that the bath is constantly stirred, that the warming is at the definite rate given above, and that the whole melting interval is recorded.

CONGEALING POINT.—No directions for the determination are given in the U. S. P. The German Pharmacopœia directs as follows: About 10 gm. of the

substance to be tested are melted in a test-tube of 20 mm. diameter. By immersion in water, the temperature of which should be about 5° lower than the expected congealing point, the liquid is cooled to about 2° below the congealing point, then stirred with the thermometer, with the addition of a small crystal of the same substance if necessary, to induce crystallization. The highest temperature recorded during the solidification is recorded as the congealing point.—If the congealing temperature differs much from that of the room, influence of the latter is lessened by placing the tube containing the liquid within a larger tube, to serve as an air-bath, as the change of temperature during the congealing interval should be very gradual, as in the case of melting point determinations.

BOILING POINT.—For purposes of identification, the following method is given in *Mulliken's Identification of Organic Compounds:* One or two drops of the liquid are placed in a thin glass tube, closed at one end, about 3 mm. in diameter. To regulate ebullition, a small capillary tube, open at the lower end, but closed about 2 mm. above the lower end by fusing the walls together, is inserted into the larger tube, which is then attached to a thermometer and heated in an apparatus such as is used for melting point determinations. The temperature at which an uninterrupted series of bubbles begins to rise is considered the boiling point.—For a test of purity at least 50 cc. should be distilled from a flask having about 50 per cent. greater capacity and provided with a side exit-tube. To regulate ebullition, fragments of pumice stone or platinum scrap should be added. The upper end of the thermometer-bulb should be slightly lower than the exit-tube. For low temperatures water-baths or air-baths are suitable, for high temperatures sand-baths or wire-gauze. To prevent overheating the vapors of low boiling substances by radiation from the bath, a circular sheet of thick asbestos, about 20 cm. in diameter and having a central circular opening about 3 cm. in diameter, should cover the bath before the flask is placed upon it. Distillation, when about 50 cc. are taken, should be at the rate of about one drop per second.—The boiling points of the U. S. P. are in greater part taken from sources that include corrections for the emergent mercury thread and for varying barometric pressure. These should, therefore, not be omitted. The first is made in the same way as described under *Melting Point.* Employment of short thermometers of the Anschuetz type make the correction unnecessary. Extreme variations of atmospheric pressure may raise or depress boiling points to the extent of 1° or more. According to a formula of Kopp, a correction of 0.0375° for each mm. pressure differing from 760 mm. is required, to be added to the observed boiling point when below or substracted when above. This correction applies to variations of 720 to 780 mm. only.

TESTS OF IDENTITY AND PURITY.—In a number of instances the U. S. P. makes statements that may leave the analyst in doubt as to whether they are intended merely as information or as definite requirements. This applies particularly to physical constants, which are sometimes given in great abundance, when one or two of them would be sufficient to determine the quality of a substance. It is desirable that, when these are considered necessary for establishing identity or purity, the wording be such, that no doubt need be felt as to the exact requirements. Too much is at present left to the discretion of the analyst, who may

contend that only such tests need be made as are distinguished by such words as "should" or "must." The statement often made in parenthesis after tests that failure to respond to reactions for impurities tested for implies "absence" of them, in many cases is not strictly accurate, as the tests are frequently not sensitive enough to detect minute traces. There is at least one instance on record that a buyer demanded complete absence of certain impurities on the authority of these statements, which was equivalent to demanding a chemically pure product. It seems preferable, in view of this, that only the names of the impurities and adulterants be given after the tests. Another source of controversy is a difference in interpretation of such requirements as "no turbidity should be produced on the addition of barium chloride T. S.," without mention of a time-limit. It may be contended that no visible reaction should take place after an indefinite period, while a more reasonable interpretation would be that the requirement is met when no reaction takes place at once or within a few minutes. A definition of the exact meaning to be conveyed by such statements as "a solution of potassium hydroxide (1 in 4)" or "diluted sulphuric acid (1 in 2)" would be desirable. It will obviously make some difference in the strength of the diluted acid, whether 1 cc. or 1 gm. of the acid (sp. gr. 1.84) be diluted, also, whether the dilution be made *with* 2 cc. of the diluent or dilution be made *to* 2 cc. It will be seen that four interpretations are possible. While in most cases, when dilution is greater, the difference is negligible, in some instances it may exert an influence on the results of tests. In absence of a definition it seems permissible to assume that 1 cc. of concentrated sulphuric acid is to be diluted with enough of the diluent to make 2 cc. and that 1 gm. of potassium hydroxide of U. S. P. strength (85 per cent.) is to be dissolved in enough of the solvent to make 4 cc. A general rule is desirable as to the quantity of solution to be taken for a test involving turbidity, color and odor reactions, etc. For instance, a slight opalescence visible in a bulk of 20 cc. may be invisible in 10 cc. or 5 cc. of the same solution; it may be visible in a tube of 30 mm. diameter, but invisible in one of 10 mm. diameter, when viewed transversely. It is to be inferred from specific directions given in some cases, that about 10 cc. should be taken and the test made in a tube of about 20 mm. diameter, unless otherwise stated. The quantity of reagent might also be given to advantage, as the delicacy of a test often depends on this. The Netherlands Pharmacopœia directs addition of 3 drops of the test solution to 5 cc. of the solution to be tested for such impurities as chlorides, sulphates, calcium, iron, etc.—*Time Limit Tests for Heavy Metals.* It would seem that a specification of the internal diameter of the test-tubes to be used is more important than their capacity, which is given as 40 cc. A diameter of 18 to 20 mm. was probably intended, as that corresponds with the average dimensions of test-tubes of this capacity, but tubes of quite different dimensions are often used. The time-limit can be shortened to 15 minutes, as no increase in color or turbidity is ever noticeable after this interval.—*Modified Gutzeit's Test for Arsenic.* The hydrochloric acid used for this test should be practically free from arsenic. An acid of U. S. P. standard of purity, which is directed to be taken, may, and usually does, contain too much. It is better, however, to use sulphuric acid, as this is more readily obtained free from arsenic. So-called "shot" or "tear" zinc has been found preferable to the

"mossy" form, as the evolution of hydrogen from it is more regular, the mossy kind often reacting too violently at the beginning. On the other hand, very pure shot zinc may react too slowly, but the action is readily accelerated by the well known expedient of adding a drop of a weak solution of platinum chloride or copper sulphate. Absorbent cotton has been used to advantage in place of cheese-cloth. It is difficult so to roll the cloth that it will be free from channels that will allow hydrogen sulphide to pass through. It has been found insufficient in many cases to evaporate with sulphuric and sulphurous acids merely to 5 cc. or until the odor of sulphurous acid is no longer recognizable. To insure complete removal of the latter, it is better to evaporate until no further reduction in volume takes place. The quantities of reagents directed for the blank test are much too small. Made according to present directions it fails to show the presence of such quantity of arsenic in the reagents as would be enough to vitiate the results of the tests made with them. A uniform limitation of 10 parts of arsenic per million appears hardly consistent in view of large differences in doses.

QUANTITATIVE METHODS.—A statement regarding permissible water contents in chemical substances, which has an important bearing on the purity "rubrics," is often overlooked because of its inconspicuous place in the Preface of the U. S. P. (p. xxxviii). Many compounds, when "sensibly" dry, may fail to meet the rubric requirements fully, unless allowance be made for adhering moisture or for chemically combined water in hygroscopic "exsiccated" salts, which is permitted in the statement referred to.—*Determination of Water.* For the determination of crystal-water or adhering moisture the sample should always be placed in a container provided with a well-fitting cover, as most anhydrous compounds absorb water from the air with more or less avidity. Anhydrous quinine sulphate, for example, may easily increase 1 per cent. in weight, while it is weighed in an open dish. For light, bulky substances it has been found concenient to use shallow dishes of thin glass, with straight, vertical sides and flat bottom, about 5 cm. in diameter and 2.5 cm. high, and with ground-glass covers, fitted in the manner of the stoppers of ordinary weighing bottles. For ordinary purposes the customary "watch-glasses" with ground edges, in pairs, and held together with metal clamps, answer as well.—*Weighing.* While the weighing of quantities in round numbers or of quantities having some relation to molecular weights, as it is often directed in the U. S. P., has certain conveniences in simplifying calculation of results, this plan is usually open to grave criticism. With liquids such a course is entirely out of the question and with solids it is excusable only in rare cases, when the necessary exposure to air during the weighing is known to be totally without influence on the substance. Even then the highest degree of accuracy in weighing cannot be attained by this method. Hygroscopic and distinctly efflorescent materials cannot be weighed in this manner with even a moderate degree of accuracy. Only glass-stoppered weighing-bottles should be used for this purpose, *about* the desired quantities placed into them and weighed in the stoppered bottles. Fuming acids and other volatile liquids are best weighed in bottles containing enough of the diluent or solvent to be used in the analysis to prevent loss. When heat is generated by such admixture, time must be allowed for cooling to room temperature and air admitted to the bottle, after

cooling, to equalize the pressure, before weighing. Residues obtained after heating in a crucible should always be weighed in the *covered* crucible, with all avoidance of needless exposure to the air of even the covered crucible before and during the weighing, unless the substance is known to be non-hygroscopic.—*Volumetric Analysis.* It is often advisable for accurate titrations to take larger quantities of the sample than given in the text of the U. S. P. When an error of 0.1 or 0.2 per cent. is of importance, enough should be taken to require nearly a full burette of the volumetric solution, but not so much that the burette has to be filled more than once, as this would double the error of reading the volume. The best burettes for precise work have an internal diameter of about 10 mm. and are calibrated with ring-like markings instead of short lines. These rings are aids in bringing the eye to an exact level with the meniscus. When volumetric solutions are used at temperatures differing considerably from that at which they have been standardized, which is sometimes unavoidable, a correction for change in volume is required. N/1 solutions require a correction of about 0.1 cc. for each 100 cc. used, for a variation of 5° from the standard temperature, to be added when below, subtracted when above, N/5 and weaker solutions require a correction of about 0.5 cc. under the same conditions (see *Lunge's Chem.-Tech. Unters.-Meth.*, 5th Ed., V. 1, p. 55). Solvents and diluents intended for acid and alkali titrations should be neutralized before using, as they are seldom perfectly neutral. The same indicator should be used that is to be taken for the titration. Doubtless through an oversight, the U. S. P. directs titration of organic acids with alkali solutions that have been standardized at a boiling temperature, without stating that a boiling temperature should be maintained during the titrations, except in the case of lactic acid. Moreover, heat cannot be employed in titrating volatile acids. For such purposes, therefore, the alkali solutions should be standardized cold, which is readily done with potassium bitartrate that has been passed through a fine silk sieve before drying. The official methods for standardizing acid and alkali solutions are defective in that solutions standardized with one indicator are used for titrations with another indicator. As has been shown by Treadwell, methyl orange is not entirely insensitive to carbon dioxide. The discrepancy caused by a change of indicators is greater than can be ignored for precise work. The writer favors standardization with potassium bitartrate for phenolphthalein titrations and anhydrous sodium carbonate, made by heating sodium bicarbonate at 260° to 280°, for methyl orange. It has been pointed out by Treadwell, Lunge, and others, that sodium thiosulphate, when dissolved in water containing carbon dioxide, continues to deposit sulphur for some days. To the directions of the U. S. P., therefore, should be added, that, unless freshly boiled water is used, the solution should be allowed to stand a week before it is standardized.—*Non-volatile and Non-combustible Residues.* The U. S. P. frequently states of combustible or volatile substances, that they are "completely" volatilized by heat or that no residue should remain after combustion or that they should leave no weighable residue, when the quantity of material to be taken is not mentioned. These statements cannot be taken literally, since weighable residues can always be obtained when a sufficiently large quantity of the sample is employed. It is now possible, as a result of a large number of quantitative determinations of such residues, to suggest practical, allowable limits. The meaning of the term "unweighable" is not defined in the U. S. P.

The German, Netherlands, and Belgian Pharmacopœias define quantities less than 1 mg. as unweighable, the Swi , and Danish Pharmacopœias quantities of 0.5 mg. and less. Crucibles or dishes of platinum are usually preferable to porcelain for exact determinations of non-volatile and non-combustible matter, on account of better heat conduction and because of reaction of some ash constituents with silicates at high temperatures, with a consequent loss in weight of the residues. For quantities of 0.1 to 0.2 gm., platinum crucible lids are generally best suited. The German Pharmacopœia give the following directions for ash determinations: A suitable quantity is first carbonized in a crucible at a low temperature, then incinerated. To hasten combustion of the carbon, the flame is removed from the crucible occasionally for a short time. If complete incineration cannot be attained by a moderate heat, the mass is mixed with hot water and transferred to a filter of known ash content. The filter and contents are washed with a little water, then returned to the crucible, dried and incinerated. After cooling, the filtrate and washings are added and evaporated on a water-bath after addition of a little ammonium carbonate. The residue is heated to dull redness, cooled, weighed, and filter ash subtracted.

(To be continued.)

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## STATE BOARD OF PHARMACY QUESTIONS ON CHEMISTRY.

A. H. CLARK.

At the joint session of the Section on Education and Legislation with the Boards of Pharmacy, and Pharmaceutical Faculties, held during the Boston meeting and reported in the Bulletin of the American Pharmaceutical Association for December, 1911, there was presented the report of the Committee on Examination Questions. This committe was appointed by the Chairman of the Section in accord with a resolution passed during the Richmond meeting (1910).

I take it that the sole object of this work is to bring about a discussion of the subjects which are of mutual interest to the Boards of Pharmacy, Pharmaceutical Faculties, and to the candidate before these Boards and Faculties, as well as to the pharmacist in general. Free discussion and liberal criticism are the best means of furthering this end, and as I had not the pleasure of attending this particular session, I am taking the liberty of presenting here a few remarks on the questions submitted as proper for candidates writing on chemistry.

Examining bodies such as Boards of Pharmacy, must bear in mind that the candidate who appears before them may have secured his knowledge of chemistry from any of the following sources: He may be a university graduate, he may be a graduate from a college or school of pharmacy, he may have obtained his knowledge from some correspondence course, he may have obtained it from some night school, or from some "quiz course," or from a private tutor, or from his employer, or by individual effort alone. These conditions are made possible by the variation in requirements exacted by the different State Pharmacy Laws. For this reason no one set of questions can be prepared to fit every case, and each

Board of Pharmacy must frame its questions to fit the conditions prevailing in its particular territory.

There are, however, certain fundamental principles which should govern every examiner in preparing his questions, and the most important of these are enumerated in the report of this committee. (Bull. Am. Pharm. Assn., Vol. VI, No. 12, p. 661, Dec., 1911.)

Questions should be so worded that there can be no possible misunderstanding *(in the mind of the candidate)* as to their import.

Catch questions, as well as those relating to obsolete subjects, should be avoided.

Due consideration should be given to the candidate's source of information, as well as the date at which he obtained it. This is of vital importance. There are many questions in chemistry on which the highest authorities differ decidedly. An examination of a number of text books on a stated subject will bring to light a number of different views, and on some questions, widely different. Every teacher of chemistry will impart to his students his own peculiar ideas on disputed subjects and the successful examiner is the one who selects his questions and so frames them that they will admit of but one correct answer no matter what the residence or training of the candidate may have been. I have seen many questions on chemistry asked in State Board Examinations which, because of their ambiguity, I am certain I could correctly answer and yet fail to receive a single credit mark.

The examiner should bear in mind that he is not instructing in the subjects on which he examines the candidate and therefore his (the examiner's) particular views must not constitute the standard by which the candidate is judged. Men of the highest attainments and ideals and wide experience disagree on many subjects, and the examiner must admit this and give the candidate full credit for answers made in accord with the views of any recognized authority, or better still, strive to avoid touching on subjects which cover disputed ground.

Above all, questions should be so framed that the candidate can not answer them by a simple "yes" or "no" alone, or by a set definition. This requirement while important is one difficult to meet, I know. Students will learn definitions, and we are obliged to admit that this is better than nothing, although one may write definitions without end and never display any real knowledge of the subjects discussed.

I know that students generally think that if they can write an equation they know all that is necessary and many candidates before State Boards have the same idea. As a matter of fact an equation usually tells very few of the facts in the case. I would make it plain in every instance whether or not equations are desired. If an equation is wanted and nothing more, I would ask the candidate to write an equation to show this or that reaction. If equations are not wanted I would make it plain by asking the candidate to tell, without the use of equations, what happens when this and that react.

The candidate should not be expected to memorize figures such as atomic weights, specific gravity, boiling points, melting points, etc.

Let us see to what extent the questions submitted meet these requirements.

1. What are acids? Give the chief chemical properties of acids.
2. What are bases? Give their chief chemical properties.
3. What are salts?

The first part of these questions calls for an out and out definition. Suppose the candidate said that "There is but one acid, and that is hydrion." What credit would the examiner give him? And yet, "in terms of the ionic hypothesis, there is only one acid, hydrion (H')" is quoted from Smith, General Inorganic Chemistry, 1st Edition, p. 345.

Ostwald, Principles of Inorganic Chemistry, Findlay's Translation, 3d Edition, p. 188, et seq., refrains from giving a definition. He says: "In the name acid is summed up a whole series of properties." "All acids contain hydrogen which they evolve under the action of magnesium." He sums up the discussion of salts by saying that "salts are electro' es." What would be the fate of the candidate who wrote as an answer to question three, "Salts are electrolytes"?

Noyes, Organic Chemistry, 1903, p. 221: "With our present conception of acids it seems to be a little difficult to frame a definition of organic acids or, indeed, of acids in general, which is not more or less arbitrary."

McPherson and Henderson, Elementary Study of Chemistry, Revised Edition, p 107: "An acid is a substance which produces hydrogen ions when dissolved in water or other dissociating liquids." Here we find a definition.

Kahlenberg, Outline of Chemistry, 1911, p. 121: "An acid is a compound containing hydrogen which may be replaced by a metal, the product formed being a salt."

Dagget, Theory of Pharmaceutical Chemistry, p. 110: "When hydrogen is the base, an acid is formed, commonly having a sour taste," etc.

Attfield, General, Medical, and Pharmaceutical Chemistry, 16th Edition, p. 267: "Hydrogen salts (hydrogen easily replaced, wholly, or, in certain cases in part, by ordinary metals) are the common, sharp, sour bodies termed acids."

Sadtler and Coblentz, A Text Book of Chemistry, 4th Edition, p. 133: "Acids are compounds of hydrogen with an electro-negative element or radicle."

Here we have the ideas of a number of authors and some confusion is noted. Whether acids are the real salts of hydrogen or whether acids are the liquids resulting from a solution of these salts in water is, according to our modern theories, an open question. The U. S. P., VIII, defines hydrochloric acid as "a liquid composed of 31.9 per cent. of absolute Hydrochloric Acid (HCl = 36.18)." Evidently this authority considers the gaseous hydrogen chloride an acid as well as its solution in water. Nearly all authorities agree that hydrogen chloride has very few if any "acid properties."

I have considered this question in detail as typical. When such differences of opinion are noted upon a subject so generally dealt with, and of such great importance, what can we expect on subjects of relatively slight importance and upon which no such amount of thought and experiment has been expended?

I fully appreciate the thought in the mind of the examiner when he framed these questions, but I think the object desired could best be accomplished in an entirely different manner. I would ask the candidate in place of question one, to mention the chief chemical properties of hydrochloric acid U. S. P. Objection might be made to this. The candidate might say that when hydrochloric acid is mixed with a solution of silver nitrate a white curdy precipitate is formed, etc. If he does, it is so much the better, as it shows he knows something about the properties of chlorides, and this is but one of the many prominent properties of

hydrochloric acid. If he mentions all the prominent properties, he must mention those that are peculiar to acids in general. If the candidate has a good general knowledge of acids he certainly can answer this question with little trouble. In the same way I would ask him in place of question two, to mention the chief chemical properties of a solution of sodium hydroxide in water.

As to question three a candidate will be more confused than by the first or the second question. Some writers would include "acids" (HCl, $H_2SO_4$, etc.) as salts. Are such compounds as FeS, $Fe_2O_3$, CaO, etc., salts?

The three questions might be combined to excellent advantage, and I would do so by asking the candidate to mention the chief differences in chemical properties of hydrochloric acid U. S. P., a solution of sodium hydroxide in water, and a solution of sodium chloride in water. The candidate who knows anything about "acids," "bases," and "salts," would necessarily have to display this knowledge to answer such a question.

4. Define the difference between normal, acid, and basic salts.

This is typical of many. Does this mean difference in color, in taste, in odor, in composition or constitution, or in therapeutic action? A candidate might know that usually normal bismuth nitrate is crystalline and the basic salt is a powder. That is a difference in these salts. I would ask him to explain, without the use of formulas, the difference in constitution (composition or chemical composition) betwen normal bismuth nitrate and basic bismuth nitrate. Or explain, without the use of formulas, the difference in constitution between sodium sulphate and acid sodium sulphate.

5. What is the official strength and specific gravity of sulphuric acid? What is meant by 66° acid?

This is not a chemistry question. It is a memory test. Further, is the U. S. P. acid indicated or the usual commercial acid? I would never require statements of this kind. There are a few instances where the strength of pharmaceutical preparations should be known, preparations containing dangerous or poisonous drugs, but never such data as is called for here. "66° acid" is obsolete in pharmaceutical practice, I think.

6. How is hydrochloric acid made? Give strength and specify gravity.

First of all, does the question call for a method of manufacturing HCl, or hydrochloric acid U. S. P., or of an acid of commercial quality? In any case it may be made by more than one method. I would ask the candidate to state how hydrogen chloride may be made from salt and sulphuric acid. Or if this seems to give too much information, ask him to tell how it might be made from salt. Or ask him how hydrochloric acid might be prepared from salt. I would not ask for strength or specific gravity.

7. What is meant by water of crystallization?

This is all right but does not bring out a candidate's knowledge of chemistry to any extent.

8. What percentage of dry sodium carbonate does $Na_2CO_3 + 10\,H_2O$ contain?

When questions involving atomic weights are asked I would give the candidate the necessary data.

9. How would you distinguish between ferrous and ferric salts?

This question might be a little more explicit. One might distinguish between

ferrous chloride and ferric sulphate by the fact that the former, dissolved in water and mixed with a solution of silver nitrate precipitates silver chloride and the latter does not. I would ask the candidate to distinguish between ferrous chloride and ferric chloride. He must know the tests for the two iron ions to answer this question.

10. Enumerate the chief differences between mercurous and mercuric salts.

The same criticism applies here as mentioned under questions four and nine. Many would say in this particular instance that mercurous salts are not poisonous, mercuric salts are, having in mind calomel and corrosive sublimate. This is one decided difference.

11. Give official name of mercuric iodide and describe it. State how it is made.

This question does not bring out a candidate's knowledge of chemistry to any great extent. It is more of a pharmacy question.

12. How is chlorine made?

Chlorine is made in a number of ways. Must the candidate describe all of them? Or only one? I would ask him to describe two ways by which chlorine is made, or may be prepared. Or to describe the manufacture of chlorine from manganese dioxide, or how it may be prepared by the electrolysis of sodium chloride.

13. Show by chemical equation how chlorine is liberated from bleaching powder. What percentage of chlorine should bleaching powder contain? Explain how chlorine acts as a bleaching agent.

Authorities differ as to the composition of bleaching powder. The U. S. P. does not state its composition. Ostwald says the question is not settled. This is a complicated subject at best. I would select as a test of the candidate's ability to write equations some interaction that is better understood and less complicated. The second part of the question is not clear. I am sure that the per cent. of chlorine contained in bleaching powder is not what is wanted, but the per cent. liberated on decomposition by acids, or the available chlorine is desired. It should not be required that a candidate remember this figure.

14. Complete the following equations:

$$Zn + H_2SO_4 = ?$$
$$MnO_2 + HCl = ?$$

This is the most ambiguous question in the list. It is an indisputable fact that every reaction takes place under stated conditions. As the conditions of temperature and concentration vary, the nature of the products produced in any chemical change will vary. Zn and $H_2SO_4$ do not interact at all, under ordinary conditions. If the $H_2SO_4$ has mixed with it a little water, say 5 per cent., there is still little or no action on the zinc at ordinary temperature. If the mixture is heated, zinc sulphate is formed with the evolution of sulphur dioxide and water. If the $H_2SO_4$ is mixed with a large amount of water, reaction takes place under ordinary conditions with the formation of zinc sulphate and hydrogen. Which one of these reactions does the examiner have in mind, and how is the candidate to read the examiner's mind? I would ask the candidate to write an equation to show the action of diluted sulphuric acid U. S. P. on zinc. Or to write an equation showing what takes place when zinc and concentrated sulphuric acid are mixed and heated. Even more indefinite than this is the question along similar lines that I have seen

in some lists of State Board questions. "Complete the following equation: $Zn + HNO_3 = ?$" Any one of a dozen or more things happen, depending on the conditions of the experiment.

17. What is a hydrocarbon? Give official name and describe an official hydrocarbon.

The question leaves a doubt as to what is meant. Explain the constitution of, or the composition of, or what are the elementary constituents of the hydrocarbons, seems to me to be better. "Give official name." There is two distinct meanings to the term "official name" when applied to organic compounds. The name given to the compound by the U. S. P. is one, and the name given to it by the Congress of Chemists, held at Geneva in 1892, is another. This latter to the chemist is the only "official name." There are several official hydrocarbons. If this is worded in this way intentionally, to allow the candidate a choice, I see no objection, except that the word "describe" is not well chosen. Is it intended that the candidate shall describe its physical properties, or explain its chemical constitution and properties? I would ask the candidate to explain the chemical constitution of benzin, or petrolatum U. S. P., or to state the most prominent chemical properties of benzin, or petrolatum U. S. P.

15. How much zinc is required to make 100 grms. $ZnSO_4$.

(Atomic weight $Zn = 65$, $H = 1$, $S = 32$, $O = 16$.)

All right as a problem except the candidate is asked to tell how much. Does this mean how many pounds, or cubic inches, or grains, or what? I would ask the candidate to state what weight is required.

16. 5 cc. of sodium hydroxide solution require 47 cc. normal $H_2SO_4$ to neutralize it, what is its percentage strength?

Must the candidate remember the molecular weight of sodium hydroxide? He certainly should not be required to do so. He is also asked to calculate the percentage strength of a solution by calculating the weight in a given volume. This is an impossibility. The weight of sodium hydroxide in 100 cc. of the solution should be asked for.

18. Give the chemical formula, strength, and specific gravity of official alcohol. State briefly how it is made.

Strength and specific gravity are again asked for. Not a question in chemistry but a memory test.

Some one might memorize the formula $C_2H_6O$ and know nothing at all about the subject. I would ask the candidate to represent the composition of alcohol by a structural formula.

Alcohol may be made in several different ways. The candidate is entitled to know exactly what is wanted. I would ask him to state how alcohol is made by the fermentation of grain, if that is what is wanted. I am informed that it is being produced on a commercial basis from sawdust. It may be made by a number of purely chemical processes.

19. What is wood alcohol? How can it be detected in ordinary alcohol? The same remarks apply here as made under seventeen. Explain the constitution, or chemical composition, I think is better.

20. What is denatured alcohol?

There are numerous denatured alcohols. If some one happened to know the

composition of one and wrote it he has answered the question. I would ask the candidate to explain what is meant by denaturing alcohol. This question does not bring out a candidate's knowledge of organic chemistry to any extent and I would refrain from touching upon it at all.

21. What is chloroform U. S. P. and how is it made commercially?

Is the constitution wanted, a description of its physical characteristics, or its chemical properties, or would the U. S. P. definition answer? I would indicate exactly what is wanted.

I believe that very few know how chloroform is made commercially. They may know from what it is made but not how. It is made in one way, and I would indicate the exact method, if I asked the question at all.

22. Give specific gravity and solubilities.

Of what? I would suspect that the question refers to chloroform but I may be entirely wrong. It is not a chemistry question in any way.

23. Describe two methods of making acetic acid.

Is it desired that the candidate describe the so-called "slow vinegar process" and the "quick vinegar process"? Suppose the candidate described its manufacture by the action of potassium dichromate upon alcohol, or by the destructive distillation of wood, or any of the several other methods he might mention, has he answered the question? If the two fermentation processes are what is wanted I would make it plain by asking the candidate to describe the two fermentation processes in common use. The question in this sense is not a good chemistry question.

24. Give a general description of acetates.

Chemical or physical characteristics or both? I would ask the candidate to mention the most prominent chemical characteristics of acetates or to discuss the chemical properties of acetates.

25. Distinguish between benzin and benzene both physically and chemically.

There is no serious objection to this question. To well describe the difference in physical properties would involve memorizing the physical constants of the two, which should not be required.

I do not know whether this list is intended as an example of questions for candidates writing for an assistant's certificate or for a full registered certificate, using the terms in the sense that they are applied in Illinois. Possibly it is intended to cover both. At any rate, no matter what is intended, I see no questions on those very important elements iodine and bromine. There is not a single question relating to the compounds of sulphur (except number five), phosphorus, arsenic, antimony, the alkali metals, or nitrogen, all of which are of the utmost importance to the pharmacist. Very little to bring out the candidate's knowledge of the nomenclature of salts. Very little that would test his knowledge of the analytical reactions of the metals, of the more common identity and purity tests of the U. S. P. I realize that it would be impossible to include everything in one set of questions, but I would omit such questions as those relating to solubilities, specific gravity, methods of manufacture, questions like numbers seven and eleven, and even the problems, and include some on these very important subjects.

# Papers Presented to Local Branches

## PURIFIED CARAMEL AND THE STANDARDIZING OF CARAMEL SOLUTIONS.*

GEORGE M. BERINGER.

The desire of the Committee engaged in the revision of the National Formulary to provide for preparations of uniform color wherever prepared if made in accordance with the Formulary recipes, has occasioned considerable study. This problem has been especially referred to a sub-committee on color standards whose reports have aroused considerable interest among those outside of the Committee as well as the members thereof.

The colorings most commonly used by pharmacists in elixirs, syrups, etc., at the present time, are caramel and cudbear. The attempt to standardize such indefinite substances has not proven an easy task and while a number of methods have been proposed, opinion has not yet crystallized into a conclusion that any of those proposed has entirely and satisfactorily solved the problems.

In the present communication the writer will confine himself to the consideration and review of the various propositions relating to caramel and leave the consideration of the problems relating to cudbear for another occasion.

Caramel is a complex mixture of a number of organic compounds produced by heating sugars to a temperature high enough to produce dark brown colorings without charring and, after the tumefaction has ceased, adding water. It is believed that it is now produced on the commercial scale entirely from starch sugar or glucose.[1] For the purpose of this communication it is unnecessary to enter into a detailed discussion of the chemistry of caramel. It is sufficient to state that it contains several coloring substances, an odorous principle separable by distillation, usually some undecomposed sugar, and a trace of caramelan a highly hygroscopic substance having a bitter taste and colorless when pure and varying proportions of water. The gravity usually ranges between 1.300 and 1.390; according to Wagner the manufacturer usually aims at 35° Baume = 1.312 at 15° C. The ash is usually quite small, rarely over 10 mg. per gram, and this commonly consists of sodium salts, chloride, sulphate and carbonate.

On heating sugars to the temperature necessary to produce caramel several dark colored bodies are produced some of which are soluble and others insoluble in either water or alcohol and at least one of these colored substances so produced requires for solution the presence of alkali or alkali carbonate and for this reason the manufacturer adds sodium carbonate or ammonium carbonate or ammonia in

*Read before the Philadelphia Branch of the American Pharmaceutical Association Tuesday evening, February 6, 1912.

[1]For details of the commercial methods of manufacturing Caramel, see Frankel's translation of Wagner's work on Starch, Glucose, Starch, Sugar, etc.

the process of manufacture. There is also usually produced a small amount of a brown colored lustrous substance not soluble in any of these solvents.

The writer has recently attempted to review and test out the various suggestions that have been offered as a means of standardizing Caramel and its solutions. This work has led him into experiments along certain lines not covered by the other investigators.

One of the first propositions made was, that in order to obtain uniformity, the pharmacist should prepare his own caramel and formulas for this purpose were proposed. The initial proposition presented in the Bulletin of the American Pharmaceutical Association, December, 1909, page 479, "is to heat 1 pound of sugar on the sand bath at 180° C. for 2 hours and dilute it to 1 pint." All of the authorities are agreed that on heating sugar to this temperature and cooling there is formed the allotropic modification of cane sugar known as "barley sugar." However, I tried the suggestion and, as was to be expected, obtained a mass with scarcely any darkening and which could in no way be considered as Caramel.

A later suggestion offered (Bulletin of N. F. Committee No. 31, page 364) was "sugar 1000 Gm., water a sufficient quantity. Heat the sugar in an appropriate vessel on a sand bath at 200° C. for 2 hours. Then add to the caramelized fluid enough boiling water to make the finished product measure 1000 cc." This product was to be standardized by requiring that "1 cc. of this diluted with 399 cc. of distilled water should have the same intensity of color as the Standard Caramel Testing Solution." The standard test solution was Stevens Standard, which will be referred to later. The adjustment of the Caramel to the standard was obtained by either dilution or concentration whichever was required.

A test of this method showed that it did produce more or less Caramel, but that for the complete caramelization of the sugar a somewhat higher temperature, 210° to 215° C., was necessary. The resulting product was treated with several portions of boiling distilled water, the solution filtered and concentrated to the volume directed in the formula and this compared with a good commercial sample of Caramel was deficient in tinctorial power and had to be further concentrated to obtain a liquid comparing with the standard proposed. The residue on the filter and in the dish was then washed with a warm weak solution of sodium carbonate and this yielded a dark brown solution of the coloring insoluble in the water alone.

A practical difficulty arises in carrying out this formula for Caramel. On heating sugar to the temperature necessary there is given off odorous vapors and fumes that fill the entire building and unless made under a hood connected with a good draught the manufacture of Caramel would be impracticable and the average pharmacist could certainly not make it satisfactorily nor economically. The resulting product as made on the small scale by different individuals will also vary considerably in composition.

There is still another phase of the subject that must be considered. If the National Formulary introduces a formula for Caramel, then that formula even though it is not in keeping with the commercial process becomes the legal formula and the product, even though inferior, becomes the legal standard for all Caramel. This might prove a very serious source of annoyance and trouble to other industries in which the consumption of Caramel is vastly greater than in pharmacy. For this reason I am constrained to believe that the proposition that the N. F.

should introduce a formula for Caramel and that the pharmacist should prepare his own is untenable.

For Tincture of Caramel a formula has been proposed in the Bulletin of the N. F. Committee No. 31, page 365, to be made as follows:

"Caramel..... 100 Gm.
Alcohol and water, each a sufficient quantity.

"Dissolve the Caramel in such quantity of alcohol 1 volume and water 3 volumes as may be necessary so that 1 cc. of the tincture when diluted with water to 100 cc. shall have the same depth of color as a standard solution prepared in accordance with the Stevens Standard Caramel Testing Solution."

The standard test solution proposed by Professor Stevens is as follows:

"Place 0.5 gm. sugar in dry test tube 20 mm. diameter. Immerse the tube to a depth of 5 cm. in a sulphuric acid bath, previously heated to 210° C. and keep at that temperature for 20 minutes. Remove the tube and when cold dissolve in sufficient water to make 200 cc. Add 50 cc. alcohol and sufficient water to make exactly 250 cc."

Several of the members who experimented with this formula claim that concordant results were not always obtained and that the width of the test tube and the degree of immersion in the bath as well as the quality of sugar used materially altered the results. The objection to sulphuric acid as a bath was met by a suggestion from Mr. Otto Raubenheimer that a bath of petrolatum be substituted therefor. As a result of my experimenting with this formula following out carefully the directions as to the amount of sugar, size of test tube, etc., I was enabled to obtain fairly uniform results. I prefer, however, to use a cottonseed oil bath to either sulphuric acid or petrolatum. On carrying out this test strictly in accordance with the instructions and attempting to dissolve Caramel in water it was found that the mass clung tenaciously to the test tube and was removed with difficulty. Further, that it was not entirely soluble in water. The insoluble portion was collected on a tared filter dried and weighed 145 mg. of residue insoluble in water. On heating this residue with a mixture of 10 cc. Sodium Carbonate test solution and 90 cc. of distilled water there dissolved out 75 mg. and I obtained a brown solution much darker in color than the original standard test solution. On making this up to the same bulk and then standardizing against the standard in Nessler tubes this was found to be 1.5 times as strong as the original standard. There still remained on the filter a portion of dark brown scales of colored material that was not soluble in either water, alkali solutions, alcohol or ether. These experiments were repeated with but very slight difference amounting to only 5 mg. of residue insoluble in water and the resulting fluids were practically identical.

Stevens Standard Caramel Testing Solution is subject to the criticism that it not only involves considerable time and routine on the part of the pharmacist, but still more, that it does not represent the entire Caramel as the stronger portion of the Caramel coloring, that requiring alkali for solution, is not taken up and his solution consequently represents only a part of the Caramel.

Dr. George A. Menge (American Journal of Pharmacy, March, 1911, 113) has criticized the Stevens process for standard caramel test solution and has recommended in place thereof a test solution made as follows:

"Make a sulphuric acid solution by adding 2 cc. of pure concentrated sulphuric

acid (specific gravity 1.84) to 12 cc. of water. Take 0.5 gm. of sugar in a test tube, add 5 cc. of the acid solution described above, and heat the mixture in a boiling water bath, with mixture continually submerged and with constant agitation, for exactly 5 minutes. Immediately add a littl cold water and then 35 cc. of the U. S. P. test-solution of potassium hydroxide; finally dilute to 100 cc."

I have found this method to yield fairly uniform brown colored solutions but not entirely of the same tint as that obtained by the Stevens method. The Menge process is the color reaction of glucose with potassium hydroxide which is well known under the name of Heller's or Mohr's Test when applied as a qualitative test in the examination of urine. The color is produced by glucose and not by Caramel and it is entirely an arbitrary standard as applied to standardizing of Caramel solutions.

F. A. Upsher Smith (American Journal of Pharmacy, September, 1911, 411) recommends a process for standardizing Caramel by comparison with an arbitrary standard consisting of a Nesslerized solution of ammonia using a standard solution of ammonium oxalate to which 2 cc. Nessler's solution is added as the arbitrary standard fixed for comparison. Here again we are comparing Caramel with another coloring which is dissimilar.

From the writer's experiments he has become convinced that the preparations of Caramel should be standardized against the Caramel color itself and not against substitutes therefor as has been done in these proposed standard test solutions. This has led to the attempt to purify commercial Caramel so as to isolate the coloring material and use this as a basis for a standard color solution to be used either as a coloring itself or to standardize commercial Caramels. It was argued that if a purified Caramel of fairly definite composition could be produced that standard solutions could then be made with but very slight variation that could be used for such purpose. Commercial Caramels contain an uncertain quantity of unconverted sugar and probably traces of caramelan and experiments to produce a desiccated Caramel by evaporation of a number of commercial samples yielded a hygroscopic material which could not be gotten into a sufficiently definite form to yield uniform results.

Experiments were then tried upon the precipitation of the Caramel colorings by strong alcohol and as a result of a number of trials the following formula was evolved for a Purified Caramel:

PURIFIED CARAMEL.

| | |
|---|---|
| Caramel | 1000 Gm. |
| Alcohol | 3500 Cc. |
| Monohydrated Sodium Carbonate | 4 Gm. |
| Water, a sufficient quantity. | |

Weigh the Caramel in a capacious bottle or flask and add 250 cc. of boiling water and thoroughly mix. Then gradually add 3000 cc. of alcohol, shaking after each addition. Then set aside for six hours; decant the alcohol on to a filter and wash the precipitated Caramel color with two portions of 250 cc. each of alcohol, decanting each time the alcohol on to the filter. Drain the alcohol thoroughly from the precipitate and dissolve it in 1500 cc. of warm water. Add the Monohydrated Sodium Carbonate, filter the solution and evaporate it to the consistence of a thick syrup. Spread this upon sheets of glass or tin plates and when dry scrape off in scales the Purified Caramel and dry further in a desiccator over Sulphuric Acid for a day or until it ceases to lose weight.

In this process the alcohol dissolves out of the Caramel, the unconverted sugar and the bitter and most of the odorous principles and only a small amount of the coloring. By distillation the alcohol can be recovered with but very little loss and used over again. The Purified Caramel so made is in dark brown, shining, translucent scales, free from bitterness and without any perceptible sweet taste and practically odorless. It is non-hygroscopic and dissolves readily and clearly in water diluted with alcohol. The yield averaged 27 per cent., and the Purified Caramel when compared in solution with the Caramel from which it was made showed a tinctorial value of three times that of the latter. A sample of the Purified Caramel so made was exposed in an open vessel to the atmosphere during a rainy spell of two days when the air was charged with moisture, yet it remained in dry non-adhering scales which had absorbed but very little water and was readily dried by being placed for a short time in the desiccator. The addition of the small amount of Sodium Carbonate was found to be necessary as without it the Purified Caramel when once made and dried was not again entirely soluble in water. This is readily understood from the preliminary explanation regarding the composition of commercial Caramels.

*Tincture of Caramel.*—I submit the following formula for Tincture of Caramel:

TINCTURE OF CARAMEL.

| | |
|---|---|
| Purified Caramel | 50 Gm. |
| Ammonia Water | 10 Cc. |
| Water | 740 Cc. |
| Alcohol | 250 Cc. |

Mix the liquids and dissolve the Purified Caramel in the mixture; filter if necessary.

Tincture of Caramel so made appears to be permanent and can be used either as a coloring or to standardize Caramel solutions. 1 cc. tincture diluted with 99 cc. distilled water or better still 199 cc. distilled water will form comparative solutions against which commercial Caramels can be readily standardized.

It is to be noted that the formula proposed by the Committee for Tincture of Caramel was 10 per cent. of the Caramel prepared in accordance with the formula given. The formula now submitted contains but 5 per cent. of the Purified Caramel, but as this is three times the strength of the commercial Caramel the tincture resulting from this formula is very materially stronger than the formula first submitted to the Committee. If 5 per cent. be considered too strong then it can be reduced to 2.5 per cent. or to such strength as may be agreed upon.

## A COMPARISON OF TEN SAMPLES OF CUDBEAR.*

HUGH CRAIG.

Ever since I was first attracted by the red and green show globes in the apothecary's windows, the color of pharmaceutical preparations has been of interest to me, and this interest has led me to much experimentation. This paper is the result of one series of experiments. But I had a particular reason for undertaking the experiments with cudbear: I was desirous of reconciling the frequent state-

*Read at the February meeting of the N. Y. Branch.

ment to the effect that by using powdered cudbear in the proportions directed in the proposed formula for red elixir the uniformity of the color of that preparation was assured, with the recent report that the amount of coloring principle to be obtained from cudbear varied in different samples as much as 1 to 2.

So I procured ten samples of powdered cudbear from ten retail drug stores, two each in New York, Brooklyn, and Philadelphia; and one each in Trenton, Princeton, Englewood, and Boonton. It is an interesting fact that the drug was obtainable in only about forty per cent. of the stores visited. Each sample was extracted, in the proportion suggested in the formula for red elixir, with a menstruum consisting of alcohol, glycerin, and water in the proportions of one, one, and two volumes.

There was a marked difference in the behavior of the powders in the menstruum, particularly with regard to the rate at which they imparted color to the liquid. One of the samples had scarcely tinged the menstruum at the end of an hour, and at the end of several hours the difference in color of the liquids was many times as great as it was in the finished "elixir." The process of extraction was carried on for eighteen hours, with occasional shaking during the first three and last one. To this long maceration I attribute the fact that the colors of the finished liquids are deeper than that of several lots made in exact accordance with the proposed process—of course the difference in the menstruums must also be recognized as bearing upon this feature.

Here is a tabulation of my observations:

| Where purchased | Texture of powder | Color of powder | Streak of powder | Behavior in menstruum | Rate of filtration | Color of filtrate |
|---|---|---|---|---|---|---|
| 1. New York | fine | purple | purple | diffused | slow | deep-cherry-red |
| 2. Brooklyn | coarse | brownish-purple | brownish-purple | some floated, some sank | rapid | bright-purplish-red |
| 3. Boonton, N. J. | fine | purplish-brown | brown | sank | good | deep-purplish-red |
| 4. Englewood N. J. | fine | light-purplish-brown | light-brown | sank | good | bright-purplish-red |
| 5. New York | granular | deep-purple | light-purple | sank | slow | medium-purplish-red |
| 6. Brooklyn | coarse | brownish-purple | brown | sank | rapid | light-purplish-red |
| 7. Trenton, N. J. | fine | purple | purple | partially diffused | slow | bright-cherry-red |
| 8. Princeton, N. J. | fine | light-purplish-brown | brown | diffused | slow | medium-purplish-red |
| 9. Philadelphia | fine | deep-purple | purple | some floated, some sank | good | bright-cherry-red |
| 10. Philadelphia | fine | purplish-brown | brown | sank | good | bright-purplish red |

A portion of the same menstruum, colored with an equivalent amount of an *old* tincture of cudbear, had a shade of cherry-red brighter and a trifle lighter than sample 1.

The statements of color in the foregoing table are arbitrary but the best possible in the absence of a standard list of colors for solutions. The color of No. 1 approximates very closely that of a 1 in 15000 aqueous solution of fuchsin; but the cudbear solution has a purplish tinge in thin layers.

The conclusions to be drawn from these observations are not quite so obvious as they at first appear. The ten lots of cudbear range through six distinct shades; and there are six markedly different colors among the solutions; but there is no direct relation between the color of the drug and the color of the resulting solution. It is plain that uniformity of color is not assured by the use of cudbear per se, and that some standard of color based upon a solution of a stable, definite coloring principle is the only means by which even approximate uniformity becomes possible.

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## BETTER TIMES FOR RETAIL PHARMACISTS.

"Some of our readers who are still in pharmacy have had sufficiently long experience to date back to the time when about all that a pharmacist knew regarding his neighbor was what disgruntled customers of his competitors told him. In those days pharmacists were more likely to look the other way than they were to greet a fellow pharmacist when they accidentally met. Times are now quite different and it is due to the good work of local organizations. Pharmacists have learned to know their neighbors as neighbors and to look upon their competitors as fellow-pharmacists in the profession and trade.

"While the social feature and the friendly feeling is an important factor in human life, it is the financial side of the present day pharmacists' calling that gives the most important contrast with conditions a few years ago. Retail pharmacists who once hesitated to pay one dollar per year dues in a state association are now perfectly willing to pay one dollar per month in their local organization, in addition to belonging to the state association and the A. Ph. A. and the N. A. R. D. They realize that the money invested in annual dues is really a business investment. Dividends are not paid regularly semi-annually, as is the case with bonds, but the returns are just as certain and as useful when they do come. The Chicago R. D. A., at its recent annual meeting, approved of a budget covering $13,000.00 expenses for the current year. Among the items was a contingent fund for legal services. Members who get into difficulty through the regular routine of the drug business are not left to their own fate, but are backed in their positions by the entire membership of the C. R. D. A. and its corporate body. This one feature of paying dividends to members is alone worth the expense of membership. It is true that members may go along for a lifetime without legal complications, but many of our readers have had the bitter experience of suits of various kinds for which they were in no moral sense to blame."—*Meyer Brothers Druggist.*

# Section on Scientific Papers

Papers Presented at the Fifty-Ninth Convention

## THE PHYSICAL AND CHEMICAL CONSTANTS OF SEVERAL UNUSUAL FIXED OILS—

*i. e.*, SILKWORM CHRYSALIDS, GRAPE SEED AND TEA SEED OILS.

CHARLES H. LA WALL.

The present day tendency in manufacturing operations is toward the utilization of materials which were formerly discarded as valueless and our knowledge is constantly being enriched by the publication of facts concerning substances which are being produced as by-products and for which appropriate uses must be found.

Three rather uncommon fixed oils have come into my possession recently which illustrate this modern tendency in an excellent manner. All of them were received from Mr. W. J. Warner, superintendent of a glycerin refinery at Berkeley, California.

*Silkworm Oil.*—Oil from silkworm chrysalids has been mentioned in literature several times as a commercial possibility. In the Journal of the Society of Chemical Industry, Vol. XXX, No. 9, page 555, it was stated that in the ten years preceding 1908 there were produced as a by-product of the silk industry in Italy alone, 32,000,000 pounds of the chrysalids, which were practically all used for fertilizing purposes. As they contain about 20 per cent. of fixed oil obtainable by expression or the use of solvents and as the residue after the extraction of the oil would possess a manurial value equal to or greater than the original material, the probability of such an oil becoming an article of commerce is clearly evident.

The sample of silkworm oil in my possession has a brownish-yellow color and a somewhat disagreeable odor. It has a specific gravity of 0.9221 at 15° C., an acid number of 17.76, a saponification number of 202.46 and an iodine value of 142.2. The refraction figure on the Zeiss butyro-refractometer was 70° at 25° C.

*Tea Seed Oil.*—Tea seed oil, as produced and used for edible and manufacturing purposes in Japan, is not derived from the *Thea sinensis,* the species of which produces commercial tea leaves, but from *Thea sasanqua,* a plant of totally different character cultivated only for its seeds. This oil, when obtained by expression, contains such notable quantities of saponin as to practically unfit it for edible purposes, though when made by extraction with volatile solvents it is practically free from that irritating substance.

The exact origin or method of preparation of the sample in my possession is

unknown. Its properties are as follows: Specific gravity, 0.9165 at 15° C.; acid number, 1.52; saponification number, 196.55; iodine number, 86.7; butyro-refractometer reading, 62° at 25° C.

*Grape Seed Oil.*—Grape seed oil has been produced for some time as a by-product of the wine industry in some parts of Europe, but until recently no attempt was made in this country to utilize the seeds. Several years ago the production of this oil was begun in connection with the seeded raisin industry and the output of oil was reported last year to have reached over 300,000 pounds. The sample submitted was a bland, pleasant nutty flavored oil of bright sparkling appearance and showing the following characteristics: Specific gravity, 0.9215 at 15° C.; acid number, 100.10; butyro-refractometer reading, 71° at 25° C.

The foregoing data are submitted as a contribution to the literature of these respective oils.

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## KEEPING QUALITIES OF SOME U. S. P. VOLUMETRIC SOLUTIONS (CONCLUSIONS)

A. H. CLARK.

At the Los Angeles meeting I commenced the presentation of a series of reports on the keeping quality of certain U. S. P. Volumetric solutions. These solutions have been under observation, in some instances for more than four years, and I wish to present a summary of the work done. In some instances the results are such as would warrant definite conclusions.

### TENTH NORMAL SODIUM THIOSULPHATE V. S.

Various schemes for the preparation and preservation of this solution were tried. The solution was made from common crystals and C. P. granular sodium thiosulphate using common hydrant water and distilled water. The solutions were made alkaline by the addition of varying quantities of sodium hydroxide. "Preservatives" were added in the form of thymol, resorcinol, formaldehyde, etc. The solutions were preserved in transparent bottles, amber bottles, cork stoppered or glass stoppered bottles, protected from the light, and exposed to the light. In every instance deterioration was shown in a comparatively short time.

Summary—Solutions made from C. P. thiosulphate and distilled water kept as well as any. Protection from light and the addition of alkali seem to retard the decomposition slightly but do not prevent it. So far as the result of these experiments go it is not safe to use a tenth normal sodium thiosulphate V. S. that is more than a month old, no matter how prepared and stored, without re-standardization.

### TENTH NORMAL POTASSIUM PERMANGANATE V. S.

Solution No. 1—This solution was standardized on April 5, 1908, and had a

factor of 1.0433. August 3, 1911, three years and four months later the factor is the same.

Summary—Permanganate solutions keep much better than is popularly believed. If time is allowed for the initial decomposition, if any, to take place, the solution keeps at least three years.

### TENTH NORMAL BROMINE V. S.

Solution No. 5—This solution was standardized May 20, 1908, and had a factor of 1.0144. August 3, 1911, three years and two months later the factor is the same.

Summary—The work on this solution, as well as on several others, leads to the conclusion that tenth normal bromine V. S. of the U. S. P. will retain its strength for at least three years under ordinary conditions.

### TENTH NORMAL IODINE V. S.

Solution No. 2—This solution was standardized May 8, 1908 and had a factor of 0.9541. There was loss in strength during the first few months but for fourteen months it remained of nearly constant strength. August 3, 1911, the factor is 0.9200.

Summary—Tenth Normal Iodine V. S., U. S. P., deteriorates rapidly when freshly made and even after some time it gradually loses strength. It should be standardized frequently for the first few weeks and if kept longer than a month restandardized every month or so.

### TENTH NORMAL POTASSIUM SULPHOCYANIDE V. S.

Solution No. 1—This solution was standardized October 20, 1906, and had a factor of 1.0636. August 3, 1911, four years and ten months later the factor is the same.

Summary—The work on this solution as well on several others lead to the conclusion that this solution keeps indefinitely.

### TENTH NORMAL SILVER NITRATE V. S.

Solution No. . .—This solution was standardized December 16, 1909, and had a factor of 1.0823. August 3, 1911, two years and eight months later, the factor is the same.

Summary—This solution retains its titer much better than is popularly believed, and if prepared and preserved in the manner described will keep more than two years.

# PHARMACOPŒIAL AND COMMERCIAL ACONITE.

WILLIAM MANSFIELD.

Various species of aconite have been used from ancient times, first for criminal purposes and in latter times for their medicinal value. The United States and British pharmacopœias recognize only the tuberous root of aconitum napellus, yet the requirements of the two pharmacopœias are quite different. There is no doubt about the kind of tuberous root official in the British Pharmacopœia as it states clearly that aconite must be grown in England and that the tuber must be collected in autumn and have an undeveloped flower bud. This means that it is the tuber separated from the tuber bearing the flower cluster at the close of the flowering season. The United States Pharmacopœia states that aconite is the dried tuberous root of aconitum napellus collected in autumn. In the description it says: "Slenderly conical, 4 to 10 cm. long, 10 to 20 mm. thick at the crown; occasionally split;" etc.; no mention being made of an undeveloped bud or a hollow stem base; so that apparently one may take his choice of a tuber with an undeveloped flower bud, which is a plump starchy tuber, or a tuber which is shriveled and heavily wrinkled, containing little starch and with a sunken stem base, that is, if the stem were cut on a level with the tuber.

Let us now consider the aconite of commerce. A very small percentage of commercial aconite consists of a starchy tuber with an undeveloped flower bud. These occur usually attached to the mother tubers. The tuber with the flower stem removed to the level of the tuber is not usual. The usual type of aconite of commerce is an aconite tuber which bore the flower cluster and with portions of the flowering stem, varying from ¼ to 3 inches in length. The United States Pharmacopœia does not allow any stem to be present, yet it is practically impossible to find a sample of aconite in the market without stems. This means that the average sample of aconite does not meet the requirements of the United States Pharmacopœia. Fortunately we have a chemical check on aconite, and if it yields 0.5 per cent of aconitine upon assay, it will meet the official requirements chemically, if not botanically.

In order to see if the starchy tuber contained as much aconitine as the non-starchy tuber, assays were made of the tubers occurring in pairs after being separated and reduced to a number forty powder. The result of the analysis showed the non-starchy tuberous root to be richer in aconitine than the starchy tuberous root. While the evidence is not conclusive it tends to show the comparative amounts of the active constituents present in the starchy and non-starchy tuberous root. Economically only the tuber which bore the flower stem should be used. The separated daughter tuber may be planted to produce the flower cluster and a daughter tuber which at the close of its flowering period may be collected for market. It interested me to note that through the short rhizome which connects the two tuberous roots, two vascular strands pass, each with a distinct endodermis. If observed closely, many of the specimens will show where this rhizome has been cut across separating the two tuberous roots and showing the two vascular strands.

Briefly stated, there are five types of aconitum napellus on the market: first,

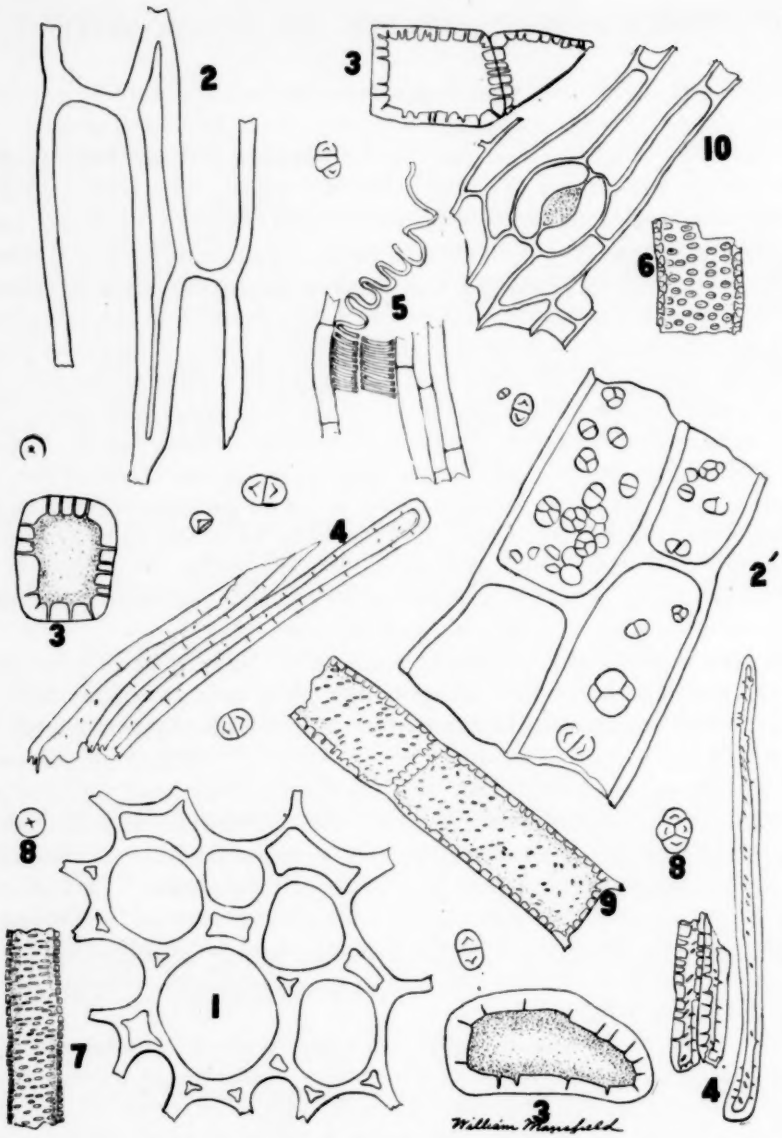


Figure 1.
(Powdered Aconite Stems.)

1. Transverse parenchyma with intercellular spaces. 2. Longitudinal parenchyma with intercellular space. 2′ Longitudinal parenchyma with starch grains. 3. Stone cells (often with dark brown contents). 4. Fibers. 5. Conducting cells with spiral thickening and xylem parenchyma. 6. Part of a pitted vessel with bordered pores. 7. Reticulated conducting cells. 8. Starch, single and compound, scattered throughout the field. 9. Pith parenchyma with porous walls. 10. Stomata, guard cells and surrounding cells of the epidermis.

starchy aconite with an undeveloped terminal flower bud; second, non-starchy aconite with a hollow stem base; third, non-starchy aconite with stem base attached (usual type); fourth, aconite in pairs, the non-starchy tuber with a hollow stem base or a portion of the stem, together with a starchy tuber having an undeveloped flower bud; and fifth, combinations of the above four types.

If the non-starchy tuber only be collected there would be insured a constant supply. There is no question but that the tuber bearing flower cluster will, when freed from any portion of the stem, meet the official requirements. Specimen number one illustrates such a sample and assays 0.6 per cent. of aconitine. At any rate let the next United States Pharmacopœia state whether the tuberous root with an undeveloped flower bud, or the tuberous root which bore the flower cluster shall be used; and also what length of stem base, if any, will be allowed.

POWDERED ACONITUM NAPELLUS.

Powdered aconite stems exhibit many striking and characteristic cells. The epidermal cells occur usually as opaque or translucent reddish-brown fragments. It sometimes happens that the cell wall is broken and the contents forced out; it is then possible to see the outline of the epidermal cells and the stoma. The guard cells are clear and are found on a level with the surrounding cells (10). The transverse parenchyma (1) has about the same appearance in the powder that it has in the cross section. The longitudinal parenchyma with starch (2) is more abundant in a number eighty powder. Number 2' is longitudinal parenchyma with an intercellular space, but free from starch. The stone cells (3) vary in form and size and the walls and cell contents are often reddish-brown or, if the walls are whitish, the contents will be reddish-brown. The fibers (4) vary in length and diameter, the walls have simple pores and the one end is often square or blunt. The simplest conducting cells have spiral thickening of the walls, and this is often seen detached in the form of a true spiral (5). Pitted cells with bordered pores (6) and reticulate conducting cells (7) are found. Scattered throughout the field are found single rounded starch grains (8), with cleft hilum, two-compound grains with a V-shaped hilum, and compound grains with an indistinct hilum. The pith parenchyma cells (9) when seen in longitudinal view have numerous pores. The

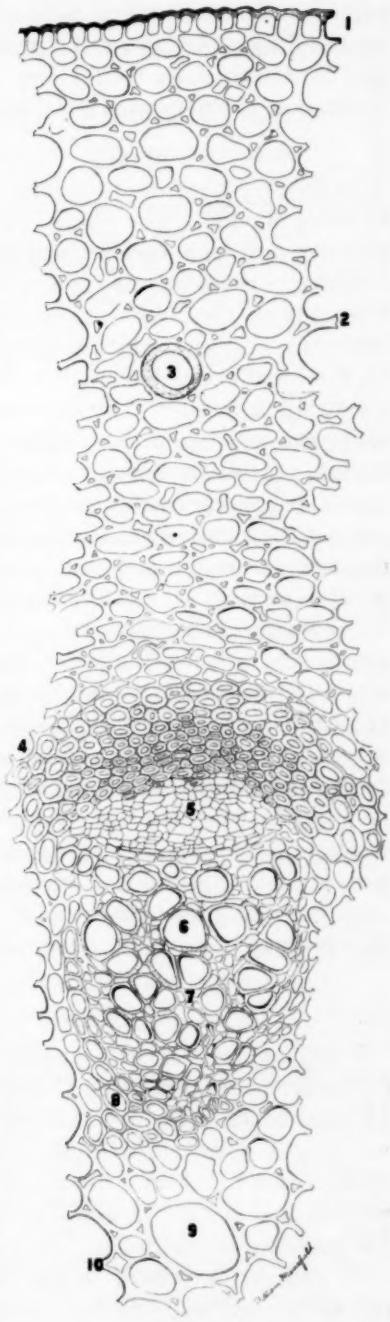


**Figure 2.**
**Cross Section of Aconite Stem.**
1. Epidermal cells with reddish-brown cell contents. 2. Cortical parenchyma with intercellular spaces. 3. Stone cells. 4. Fibers. 5. Sieve and surrounding cells. 6. Ducts and tracheids. 7. Xylem parenchyma. 8. Fibers. 9. Pith parenchyma. 10. Intercellular space.

presence of aconite stems in powdered aconite is clearly shown by the fibers (4), by the thicker-walled parenchyma cells (2), by the epidermis with stoma (10), and by fewer stone cells. The fibers can also be determined chemically by an estimation of the crude fiber.

STRUCTURE OF THE CROSS SECTION OF ACONITUM NAPELLUS STEM.

In the cross section of the larger stem bases of aconitum napellus, there are fifty or more bundles. The fibers form nearly a complete ring with an arch of fibers just outward from each phloem portion of the bundle and extending inward often completely enclosing the xylem and forming a closed collateral bundle. This is true only of the older formed bundles. As the stem increases in diameter new bundles are formed which at first have fibers surrounding only the phloem portion of the bundle and then only a few cells wide. The cross section exhibits the following structure: The epidermal cells (1) are radially elongated, thin-walled cells with reddish-brown contents; the cortical parenchyma cells (2) are thick-walled, nearly circular in outline, with prominent, mostly triangular intercellular spaces, becoming smaller and smaller as we near the fibrous sheath. Among the cortical parenchyma cells are found large thin-walled stone cells (3). Frequently not more than one is found between the epidermis and the fibrous layer, while in other sections several stone cells occur. The fibers (4) have a rounded outline, the walls are yellowish-white, thick, with small cell cavity and show clearly the line of separation of the fibers, which appear as a dark line between the cells. The fibers (8) inward from the xylem are thinner-walled than those surrounding the phloem. The cells of the phloem (5) are thin-walled and irregular in outline, no sharp distinction being seen between true sieve cells and surrounding cells. In some of the bundles the cambium cells are quite distinct; while in other bundles no characteristic cambium was observed. The conducting cells of the xylem (6) vary greatly in diameter and are surrounded by parenchyma cells (7). The pith parenchyma cells (9) are thick-walled, nearly circular in outline and fiilled with starch grains. The intercellular spaces (10) are larger than in the cortex and they are quite frequently quadrangular or pentangular.

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## THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Every progressive wide-awake pharmacist in the United States is or should be a member of the American Pharmaceutical Association. This organization stands for that which is highest and best in American pharmacy. It has wielded and is wielding a powerful influence in the development of medical practice. It is endeavoring to so raise the status of pharmacy as to place it on an unquestioned professional basis. It would be a long story to relate all that this body stands for and does in pharmacy. At its head are the American leaders in pharmacy.

If you are interested in the improvement, the development of your calling, become a member, remain a member, attend the annual meetings (if possible) and become informed on what is happening in the front ranks of American pharmacy. Send for membership application blanks to Professor W. B. Day, 74 East Twelfth Street, Chicago. Become a member as soon as possible and be at the meeting at Denver, Colorado, the week of August 19, 1912.—*Pacific Pharmacist.*

# Section on Education and Legislation

Papers Presented at the Fifty-Ninth Convention

## ARE THE PRESENT DAY NEEDS OF THE PRACTICAL PHARMACIST MET BY THE PHARMACEUTICAL CURRICULUM?

L. E. SAYRE.

An individual engaged in the manufacture and vending of drugs can only serve efficiently the social body of which he is an organic part by reason of careful training to such service. If, like the poet, the pharmacist needs to be born to his task, it is equally requisite that his innate capacities be thoroughly and systematically perfected. The nature of his profession is such that failure to perform his duty involves something more than the mere sacrifice of his own success; it involves injury to the well-being and health or after life of those whom he is intended to serve.

Yet, while it is a matter of the utmost importance that the pharmacist be fully equipped for his vocation, there is another consideration calling for almost equal emphasis; namely, that the pharmaceutical student be not obliged to spend his time in any activity which does not really prepare, or in any activity offering really valuable preparation, longer than necessary While he is learning, he is on expense; and he feels that his time should be worth something to him. Moreover, those branches which have little bearing on his future work may have a tendency to obscure those possessing real value. Hence the importance of securing a pharmaceutical curriculum that, while it meets the present day needs of the practical pharmacist, does so at a minimum expenditure of time and money.

Three questions at once present themselves for consideration. Are we going to plan the curriculum of the pharmaceutical student with reference to the progress we would like to see his profession make, or shall we base it upon the need of the public for protection against incompetent servants; or shall we strive merely to make of him an accurate and reliable business man?

The importance of providing for the advancement of pharmacy cannot be overestimated. Lack of attention to this matter on the part of those most deeply concerned has already permitted a lamentable decline in the profession. The pharmacy of today offers greater complications than that of fifty years ago, since it takes more of a chemist to detect error than to manufacture; and inadequate preparation for the work invites imposition. Moreover, as methods of drugless healing, legitimate and otherwise, flourish, the dependence of therapy upon pharmacy diminishes; hence the druggist whose early training has given him a mental equipment of the mere facts of his trade must supplement his stock of goods with notions and stationery in order to make a living. Yet the retrogression we have

seen will be exceeded by that we may see if Schools of Pharmacy do not arouse themselves to the needs of the future. When graduation from a pharmaceutical course marks a real commencement in a career progressive enough to keep pace with the standard set by the other professions, the pharmacist does not enter avenues of trade, but instead takes urinalysis, microscopy, and other laboratory burdens off the shoulders of the physician. Thus, and thus only, will pharmacy become in the fullest measure what it has been and should be—an honored and honorable profession.

Many of the best schools of pharmacy already recognize this need. Courses are gradually lengthening out so as to include more of both basic and special sciences; and the training is in all ways more thorough. Looking over the curriculum of the various schools, we find prominent a tendency toward building up courses of study with direct reference to the advancement of pharmacy as a profession.

Yet there is danger in too extreme an adherence to this point of view. There is very possibly a tendency on the part of some of the best colleges to become too scientific. We must not with gazing at stars lose our consciousness of present day needs. The public demands efficient service *now;* and the facility with which this demand is met determines broadly the whole welfare of the future. Thus preparation for public service is in the highest degree important; and between it and preparation for scientific progress there must be active coordination. We can dispense with neither.

The public is peculiarly at the mercy of the decisions of the pharmacist, be he wise or unwise. The degree of responsibility for common welfare which the pharmacist must carry is correspondingly great; and for such responsibility, the curriculum of training schools should be designed to fit him. Heedlessness in mere details may be frought with grave consequences. I quote from a letter by Wilhelm Bodemann to the *Pacific Pharmacist* regarding an experience with graduates of pharmaceutical schools:

"Three happened to come at the same time, just as I took a prescription calling for ten grammes chloral hydrate in two ounces of vehicle. Dose, a teaspoonful. I asked them to put it up for me. The one with the blue ribbon parchment asked me if I had a solution of bichloride of mercury for dispensing purposes—that's the way he was going to put this recipe calling for chloral hydrate. I asked the three of them how much of a dose they would have of the chloral hydrate. They all *guessed* it wrong; none could *figure* it."

We scarcely need to comment on the inability of these young men, from whatever schools they were graduated, to protect the public from its own ignorances. The curricula of pharmaceutical schools should be so planned as to admit of an abundance of actual practical experience in making up prescriptions.

Thus we note the importance of both of the first two questions in making up a pharmaceutical curriculum. The third remains to be considered. Should business training be included in the course of study? Unquestionably, since modern practical pharmacists are more often concerned with the purchasing and vending of pharmaceutical supplies than with manufacturing them, students must be in some wise prepared for this phase of their work. Business training is a factor

important enough to make or mar future success. To give it precedency over scientific training would be a grave mistake; yet, if Schools of Pharmacy are to graduate students really prepared to enter upon their vocation, there must be included in the course of study something of practical business training.

While this paper was under contemplation, the author sent out a number of circular letters to members of the laity and heads of Schools of Pharmacy inviting answers, with suggestions, to the three questions we have been considering; namely: Shall the present needs of pharmaceutical education be viewed from the standpoint of pharmaceutical science and progress; or, shall it be viewed from the standpoint of the public which is to be protected from incompetency; or, shall we admit the business point of view? The responses were enthusiastic and to the point. One writer says:

"The present needs of pharmaceutical education should be viewed, according to my judgment, from both the standpoints covered by your first and second questions, with the emphasis decidedly upon the first."

Another writes:

"I fail to see how a comprehensive course of pharmaceutical education can or ought to be viewed other than from the standpoint of pharmaceutical science and progress and at the same time also from the standpoint of the public, aiming to protect it against incompetency. I realize the difficulty of a nice balance of both of these requirements. Both are essential, yet I sometimes feel that the tendency of the pharmaceutical pedagogues is toward the idealistic rather than the practical. While these high ideals as to the necessity of pharmaceutical progress along the lines of the sciences, is to be encouraged, I have seen a great deal that makes me believe that much is so top-heavy that it becomes impractical, and fails from its impracticability to fit the student to properly discharge his duty as a protector of the public."

The further need of business training was touched by a number of these correspondents. One of them says:

"Pharmaceutical education cannot ignore the proper business development of the student, so as to equip him with the knowledge of business methods that will aid him in the earning of a livelihood. The sole aim of pharmaceutical education should never to be made the teaching of business methods or the development of trade traits; yet, a proper acquaintance with the methods of business is certainly essential."

Another writes:

"It seems to me that if practicing pharmacists cannot supply in their own establishments the business training that they require their clerks to possess, the latter should be required to attend a business college. Yet even upon completion of a business course the young men could not possibly be qualified in every sense to carry on the work of the average drug store without considerable practical experience in the drug store and drug store laboratory. The pharmacists who demand fully trained assistants without in any way assisting in their training are, in my opinion, unreasonable."

In addition to the latter citation we need only reiterate that business training should be an addition to, not a subtraction from the course. The best interests of

the public will be served when our professional pharmacist has business ability enough to make the profession sufficiently lucrative. And, too, the profession will be best served as it will attract virile and progressive men. Indeed, the need of lengthening the course for a number of other reasons should be recognized. Even the two-year man can scarcely do justice to the fundamentals and still have time to master urine and stomach analyses, and other subjects looking toward that advancement of the profession that we deem desirable. Ample time should be given to chemical analysis, research, and theoretical and practical pharmacy.

So far, we have been considering only those pharmaceutical schools whose curricula are shaped by necessities of the present and ideals for the future. We, unfortunately, have in large numbers, however, a class of schools which exist solely for the purpose of preying upon a gullible public. In six months, or even less time, they graduate students with just a sufficient smattering of the essentials to enable them to get past pharmaceutical boards too much interested in the lucrative side of pharmacy. The information possessed by such candidates is not thoroughly enough grounded to enable them to adequately or safely serve the public. Yet they are permitted to compete with legitimate men to the injury of the profession. I have in mind two such instances. In the one case a young man too poor to stay in school over twenty weeks "passed the board." He returned in a year as proprietor of two stores, having been helped to them by a capitalist relative. The father of the other bought him a drug store after the completion of an *eight weeks* course. He wanted a correspondence course from us to help over his difficulties. That such men become competitors is not the most serious consideration, is evident.

Even if such courses could really give the fundamental knowledge requisite in any adequate way, they must absolutely lack provision for the practical experience in handling drugs that makes an essential part of the training of a good pharmacist. The student has no time to acquire familiarity with the very tools of his trade.

The better class of pharmacists owe it both to themselves and to the public to resist the encroachments of this class of schools and their graduates in every possible way. Something can be effected through legislation. Pharmaceutical requirements may be raised and schools of pharmacy thus obliged to lengthen their period of training. As an example of what has been accomplished in the West we may cite North Dakota, where the applicant for registration is required to have been in attendance at a school of pharmacy at least one year and to have had three years' experience in a drug store in 1914, after 1915 not less than two years' attendance at a college and two years' apprenticeship in a drug store.

Notwithstanding these exceptions, however, in looking over the curricula of the syllabus and the various accredited schools, we are inclined to believe that the needs of the practical pharmacists of today are quite fully met; and taking into consideration the demand of the public for protection, on the one hand, and on the other, advancement of the profession from both a practical and a scientific viewpoint, we feel that the present courses as outlined by various teaching colleges are not too extensive and make no greater demands of the student in his preparation for future service than is at the present time required of the practical pharmacist, and that, when diplomacy has successfully paved the way through the

mire of financial and other considerations, the customary over-burdened two-year course should be extended by at least one year.

It is a matter of encouragement to educators that Boards of Pharmacy and State Associations are taking more interest in pharmaceutical curricula. The graduation prerequisite question has been taken up in at least three legislatures—California, Illinois and Washington. While their legislatures have failed to give adequate support to such a measure, the failure has not been due to lack of support of earnest, thoughtful and, I may say, progressive pharmacists. In the State of Washington, we are told, the Board of Pharmacy was in favor of graduation prerequisite requirement but the Association was lukewarm. When State Associations and Boards of Pharmacy work together with the teaching institutions insisting upon a properly balanced curriculum in our colleges, keeping in mind the three elements referred to in this paper, the present day needs of pharmacy are more surely and satisfactorily to be met, than they can possibly be when these factors of education are for any reason not properly co-operative and co-related.

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## THE MAKERS OF MEDICINES.

The revolution which has taken place in the making of medicines during the past half century was made most manifest by a gathering held at the Waldorf-Astoria Hotel on February 6 and 7. Here were gathered some forty makers of medicine, representing a capital of probably fifty million dollars, whose annual output probably approximates seventy-five million dollars a year in value. Never before in the history of medicine has there been such an aggregation of vast interests affecting the makers of medicines gathered in one small room. Fifty years ago such a gathering would have been impossible. Then the individual pharmacist made his own fluidextracts, his tinctures, his pills, and even his plasters. Then there were no biological products used in medicine except vaccine virus. Serums were undreamt of. Galenical preparations made direct from the drug by the individual retailer had not been replaced to the extent they now have been by alkaloids and active principles extracted by chemical manufacturers. Then every pharmacist was a manufacturer, even if he did no more than make tinctures and pills. Now the pneumatic pill machine makes and coats with gelatin a million pills in less time than it took the oldtime pharmacist to make a hundred. And it does the work on the whole better. The workman who makes quinine pills in the modern laboratory does nothing else. He becomes a highly specialized expert. The product is uniform and niceties of composition and manipulation are worked out in a way which could only be done under the modern method of specialization. —*American Druggist.*

# Section on Practical Pharmacy and Dispensing

Papers Presented at the Fifty-Ninth Convention

## CULTIVATION OF ECHINACEA AND BELLADONNA.*

L. E. SAYRE.

Some two or three years ago my attention was called to the subject of the cultivation of medicinal plants in the United States. I have taken a good deal of interest in that particular enterprise. I shall confine myself almost entirely to a few statements with regard to Belladonna and say nothing of the most excellent work in medicinal plant culture in different parts of the country, and especially under the direction of the United States Board of Agriculture. It seems to me that we must, in this country, in a very short time, consider this question of the cultivation of medicinal plants very seriously. I wrote to the Department of Agriculture at Washington with regard to the question of one of the plants that is very abundant, or used to be very abundant, in the State of Kansas. The plant I refer to is Echinacea, which, no doubt, you have learned the American Medical Association has "turned down" and yet, notwithstanding, the demand for this by the practitioner today is to the extent of about 200,000 pounds annually. *Echinacea Angustafolia* grows very abundantly in Rooks county, Kansas. I was instrumental in directing Doctor Lloyd and other manufacturers to a botanist in that section and started the enterprise of its collection.

I would like to say in reply to the report made by the American Medical Association with regard to this plant that some years ago while attending a county medical society in Kansas, one of its members asked publicly if anyone knew about the drug known as Echinacea. I said I had some knowledge of it and gave something of its history.

I was asked if I knew anything about the therapeutic qualities. As a pharmacist I could not make any statement as to its therapeutic action, but stated that physicians were reporting good results from its use in cases of eczema and other like diseases. After the close of that meeting, one of the members of the society came to me and said: "Professor, if you want to know something about the therapeutic action of Echinacea I would like for you to go with me over my round in the treatment of cases where I apply it. I would like to show you something of its action." One day he called to take me out as promised. He said: "I am treating this case entirely with Echinacea and I want you to see it." The action of the drug seemed to be very helpful indeed. I said to the doctor after he had carried this patient (afflicted with carbuncle) through successfully that I really felt one must admit there was some value to Echinacea.

Echinacea has been going out of the State of Kansas to the extent of about

*Delivered orally and corrected by the author from the stenographer's notes.

200,000 pounds a year. This suggested to my mind that in the course of time the plant would be extinct and it would be necessary for us shortly to adopt some measure by which the plant could be cultivated, otherwise it might be entirely exhausted. I wrote to the Department at Washington and asked them to study up the cultivation of the plant and give us some information regarding this as someone of the farmers might be interested in cultivating it. The Bureau of agriculture has done some work upon this and their reports as to its cultivation are very satisfactory indeed.

The point I want to speak of particularly is in regard to the cultivation of Belladonna leaf. My attention was called to this as a member of the Revision Committee of the United States Pharmacopœia. Dr. Albert Schneider, of California, has been very much interested in the cultivation of this plant and a year or so ago he asked me as a member of the Committee whether I would not take up the investigation of Belladonna with a view to assisting the people of this country in cultivating the plant itself. He remarked in his letter: "Unless the United States Pharmacopœia can introduce into the Pharmacopœia the term 'Herba Belladonna' instead of 'Belladonna Folia' we cannot possibly compete with the British leaf or European leaf." He says: "In the various analyses I have made of the stems and of the leaf of Belladonna, I find that the alkaloidal assay of the mixture is above that of the United States Pharmacopœia."

Before I took up this matter for investigation I wrote to Parke, Davis & Company and others who are familiar with this production in California and asked them for their results. Then, I had sent to me at the laboratory the plant as cultivated there. Analyzing the plant for its alkaloidal constituency, and doing this with the leaves separate, and then with the leaves and stems combined. The question in our minds was, Would it be possible and safe for us to introduce into the Pharmacopœia "Herba Belladonna," thereby including the leaf and the stems?

I wish to acknowledge my indebtedness to Professor Havenhill for the great assistance rendered by him in these analyses. The result in our laboratory shows that the stems and leaves combined, of the American plant, yield an alkaloidal strength greater than the requirements of the United States Pharmacopœia. So I am going to recommend to this Committee that Herba Belladonna shall be introduced into the United States Pharmacopœia. What effect that motion will have, I do not know. No positive conclusion has as yet been reached.

A letter recently received from Mr. Schneider states: "For this year the herb from five acres of Belladonna will be about two and one-half tons. Under favorable cultural conditions the yield will be, in all probability, three and one-half tons, but owing to some difficulties I have not been able to have the field operations attended to as they should have been."

This is the gist of the letter. He writes me quite a long letter and states something interesting with regard to the analyses. He will send me in a short time from this year's yield an average specimen of Belladonna Herb from this two and a half tons, so that the analysis of the whole herb will be made and the report will be given to the Sub-Committee. I trust that thus home cultivation of medicinal plants will be encouraged by the pharmacists at large, by the public and by the Committee of Revision of the United States Pharmacopœia.

# Section on Commercial Interests

Papers Presented at the Fifty-Ninth Convention

## THE COST OF DOING BUSINESS.

E. FULLERTON COOK.

It will probably not be out of place in such a symposium as has here been planned to again bring forward the all important question of cost or expense of doing business.

While there is an increasing recognition by druggists of the necessity for knowing absolute cost, that a profit-making selling price may be determined, yet there is room for renewed emphasis and more discussion under such conditions as these. The golden key which unlocks with certainty the storehouse of profit in modern business is intelligent and scientific management.

Much has been written and preached about advertising, including store arrangement and window displays; many new plans for buying goods have been offered and put into successful operations, and these are of great importance, but they are only part of a manager's problem. Before him stands the whole ultimate question of profit and, to conduct the business so that all divergent forces are harmonized and this result accomplished, must be his constant endeavor.

The right proportion of first cost, expense per cent., and profit per cent., in the fixing of the selling price, scientifically applied, assures this result, and is the real question for adjustment.

FIRST COST.—No attempt will be made here to discuss the buying of goods however important that may be as a factor in profits. Needless to say the cheaper the price for which goods can be bought by the dealer, quality being equal, the more likelihood there is of a profit-making and sale-inviting price at retail.

*Cash Discounts.*—In this connection cash discounts may not be overlooked. A few years ago they were ignored by the druggists generally, but the testimony of many today, who are successfully solving the bigger problem of profits, has proved beyond doubt its advantages. It means best buying prices, good service, independence, profits and, most important, freedom from the harassing worry attending unpaid bills and accumulating debt.

EXPENSES.—Expenses, big and little, should be under absolute control. They should be systematized, classified and, so far as possible, anticipated. At the beginning of the year, when percentages are being figured for the fixing of a profit-producing selling price, all expenses not fixed, should be estimated from previous experience, appropriations made and accounts opened, care being taken to see that the appropriation is not exceeded if the expected profit is to result.

FIXED EXPENSES.—There are certain fixed expenses in all businesses. These should be carefully determined. The following are the more important:

*Rent.*—This must be charged if the property is owned by the store proprietor, as conscientiously as if paid to a landlord. A rental equal to that obtainable in the neighborhood for similar property will be a satisfactory guide to the amount to charge.

*Clerk Hire.*—This important item requires constant attention; certain stimulating expedients often make it possible to reduce this expense through the securing of better service from a less number of assistants. This involves the much talked of science of efficiency.

*Insurance.*—Few business men can afford to ignore insurance. It is a necessary and legitimate expense and should at least include fire and indemnity insurance, the latter being exceedingly valuable since it affords protection in cases of error, or a claim of error, with attempted blackmail.

*Taxes and Licenses.*—These must be included with other expenses.

*Telephone.*—An expense of every modern business.

The preceding are the more common fixed expenses, but there are others not always recognized, as:

*Proprietor's Salary.*—A stated amount should be charged regularly as salary for the proprietor if he is giving his time to the business. If he is not devoting his energies to the work of the store he is certainly paying someone else to do so and it is but fair that he who does assume the responsibility, work, worry and risk of loss, should be the best paid man connected with the business. He should not wait for expected profits to give him living expenses.

*Interest on Investment.*—This is another item of expense which is often ignored, giving false ideas of profit. Of course if the store is being conducted with borrowed capital the interest is charged to expenses, but it is equally legitimate and necessary to charge interest for investment when the capital is supplied by the proprietor.

FLUCTUATING EXPENSES.—Besides these fixed charges there are many others that arise from time to time, some seemingly trivial, but all worthy of careful accounting and watching. In fact where business is planned on a low percentage of profit these incidental expenses may unwittingly increase until they have entirely swept away gain which might have been expected. It is recommended, as has already been suggested, that appropriations be made at the beginning of the year for such expenses, and that these expenses then be regulated so that the year's close will not find the appropriation exceeded.

There will be many leaks stopped if all know that a strict accounting is being kept of every cent expended. Items belonging to this class are light, heat, stationery, labels, stamps, delivery, freight, drayage, advertising, donations, shortage, breakage, failure to charge, bad accounts, etc. The last four, shortage, breakage, failure to charge and bad accounts, are difficult to estimate, but cannot be ignored; careful management, however, will reduce them to a minimum.

The importance of guarding against unnecessary expense is emphasized by a moment's study of profit. Suppose the sale of $100 worth of goods figures out about as follows (and this would be considered an unusually good average for the

retail business): First cost, 70 per cent.; expense of selling, 20 per cent.; net profit, 10 per cent. It can readily be seen that $5 saved in expenses is equivalent to the profit on $50 worth of goods sold over the counter and, if the profit per cent. is only 5 per cent., the saving of $5 is equal to the profit on $100 worth of goods.

Such a viewpoint puts a new light on expenses and every clerk should be made to see expenses in this light.

DEPRECIATION.—Depreciation is another item which must be counted in the year's expense. Usually 5 per cent. is counted off the value of fixtures and about 10 per cent. from the soda water apparatus, while it is often necessary to allow for depreciation in sundries. This is based upon the likelihood of entire replacement of fixtures within twenty years and the buying of a new soda fountain within ten years. It is practically creating a sinking fund; a sound business principal.

PROFIT.—Knowing the first cost of goods sold throughout the year and the expense incurred from all sources to place such goods in the customer's hands, it is not difficult to determine the percentage ratio between cost and expense. Unless there has been added to the first cost at least a percentage equal to the percentage of expense, in fixing the selling price, there has been a positive loss for each sale. But a business man at the end of the year cannot be satisfied with only covering expenses, he must have made a profit. He must add to his first cost the percentage of estimated expense and then the percentage of profit he desires, and this will give a properly determined selling price and insure a legitimate profit. I say a legitimate profit, and a man in business is justified in expecting a fair profit, for it is but a sinking fund upon his own life which will probably become incapacitated, on the average, in from twenty to thirty years.

A profit is really figuring depreciation on life, making it possible to retire with some accumulated reserve, after a reasonable number of years of activity.

INVENTORY.—This, however laborious it may seem, is necessary for a right adjustment of the various interests of a business. The drug business has been slow to recognize this, but right business methods are being introduced in many stores and its worth is acknowledged. Not only does it insure a correct statement of the condition, but it keeps the stock from stagnating, helping to prevent accumulations which are often deceptively figured among the assets.

FIGURING PROFIT.—The important factors for determining profit are the inventory at the close of the preceding year, the current inventory, the first cost of goods bought during the year and the total expenses of conducting business during the same period. With these factors determined the following simple rule will show gross profit or net profit:

*Rule.*—First deduct from the year's purchases any increase found in the stock, or add to the year's purchases any decrease noted by comparing the inventories, thus determining the cost of goods actually sold. Then,

The gross profit is obtained by subtracting the cost from the year's sales.

The net profit is obtained by subtracting the expenses of the year from the gross profit. It may be graphically shown as follows:

Let S=Sales of year; C=Cost of goods sold; E=Expense to do business.

Then S—C=Gross profits, and S—(C+E)=Net profits.

# Section on Historical Pharmacy

Papers Presented at the Fifty-Ninth Convention

## RECOLLECTIONS OF MICHAEL CARTEIGHE.

JOSEPH P. REMINGTON.

After the last page of the life-book of a man is closed, it is profitable for his contemporaries to review the chief facts of his life, and to place on record a just and fair estimate of his services to the world. The subject of this sketch was a noted man with a marked personality, and would never be overlooked in any assembly.

It was the writer's privilege to know Michael Carteighe. The few occasions when it was possible to meet him personally must not be considered as representing the opportunities of judging of his character, temperament or achievements. Regarding his personality, the first impression was that of an intense, brainy, successful man, who made it his business in life to first settle upon a course of action, and then to go swiftly forward, employing every agency which he thought necessary to win success. Resourcefulness was "writ large" among his attainments.

In studying his life, one is amazed at the methods he employed to accomplish his purposes. Great Britain has cause for thankfulness that Michael Carteighe's heart and soul were pure and undefiled. If it had been otherwise, Carteighe's power for harm would have been tremendous. He overcame opposition by the sheer power of his personality and intellect, and the combination of qualities which he swiftly marshalled to his aid. Those who worked with him could scarcely tell in advance what plan of action he would use, and they never could tell when he would change his method of attack or defense. He reminded the writer of a star fullback in a football match. Given the signal for the run, with the precious pigskin grasped firmly to his breast, he is off like a shot, picking his field, dodging to the right or the left, using the straight arm to ward off the tackling opponent, infallibly choosing his openings, seeming to know by intuition when to pause and when to rush, taking advantage of every misplay of the enemy, and with a vitality outlasting his opponents, there is no halting until the goal posts are reached and the ball planted squarely between.

This first impression was always present in the mind of the writer, but it is manifest that those who knew the early life of Michael Carteighe must have seen him playing a patient waiting role. It must have been a rare treat to see Carteighe in action, in repose, in study, on the mountain-top in Alpine costume, at the Chemists' Ball, in fierce debate at the Society's rooms, at a committee meeting laying out the plan of action, interviewing a prime minister, cajoling a reluctant member, confusing a pedant, scoring a doubter, yielding a non-essential point to his weaker opponent when he knew that he had gained the main contention, or

sometimes deliberately provoking opposition to strengthen the power of his victory which he saw was coming.

Michael had the heart of a lion; and withal it was as tender as a woman's. He was sympathetic in times of distress, gentle when consoling a troubled friend. He had a great gift of intuition, and knew how to push aside trivial matters and reach the core of the situation quickly. Such a man was a born leader among men, even as a youth doing unthinkable things, such as criticising the management of a distinguished Society on the public occasion of his receiving a notable prize for his attainments. Such an act would undoubtedly provoke criticism for its audacity, but it probably represented one of the remarkable methods which Carteighe took to startle people out of ruts, trusting that the manner and merits of his criticism would produce rapid results.

Carteighe never seemed to realize that inherited qualities, environment and dual possession of a brilliant mind and magnificent physique made him what he was; and at times he was intolerant and rode rough shod over his fellows; but it must not be supposed that he was not informed when he made mistakes, and he knew well how to retrieve a blunder. If it were necessary to carry an important point he would not hesitate to affront a contemporary if he thought he could thus bring success to his plans; doubtless there were occasions when he provoked a fight unwisely, due probably to lack of restraint and an overfulness in his heart, arteries, veins and capillaries of rich Irish blood. In considering Michael Carteighe's personality one must be impressed with the fact that he was an Irish Englishman, rather than an English Irishman.

Born in Lancashire, England, his ancestry were from County Cork, Ireland. At an early age he went to London to attend a school at Clapham. He was apprenticed to Mr. C. J. Radermacher, a London chemist, who is still living. He became a demonstrator in Chemistry under Professor Williamson, University College, London. He entered the firm of Dinneford & Company in 1863, in which his brother, John Carteighe, was a partner. In the previous year, Michael Carteighe had entered as a student in the School of Pharmacy of the Pharmaceutical Society of Great Britain, with a record unsurpassed for brilliancy of attainment. In 1864 he was elected Auditor of the Pharmaceutical Society, a connection which lasted forty-six years. In 1866 he was elected a member of the Council and a member of the examiners of the British Pharmaceutical Society. He acted as local Secretary of the British Pharmaceutical Conference in 1874. In 1880-1882 he became Honorary Secretary of the Conference, and its President in 1883. In 1881 he was English Secretary of the Fifth International Pharmaceutical Congress. In 1882 he was elected President of the Pharmaceutical Society of Great Britain, and continued in this office fourteen years.

During this time he was indefatigable in his efforts to remedy the evils which beset the progress of pharmacy; but, like most reformers, he was ahead of his time. In some of his most persistent and heroic efforts he was not always supported by the rank and file. It was ceaseless and persistent work which led to the publication of the British Pharmaceutical Journal Formulary and the Pharmaceutical Codex, in 1907.

Although he had a strongly developed taste for chemical research, and had delivered a number of lectures upon physics, this gifted man turned aside and

chose for his life-work the betterment of pharmacy. An appreciative writer (see *Am. Jour. Phar.*, August, 1910) sums up most admirably Michael's career:

"It was his addresses on pharmaceutical politics by which the greater number of pharmacists will remember him. Some of his most brilliant efforts were made extemporaneously on occasions when no reporters were present to place his utterances on record. In speech he was a model of lucidity; he not only knew his subject thoroughly, but had the gift of presenting essential facts in such a way that his hearers not only understood what he intended, but carried away with them what he intended they should remember. His speeches expounded the policy which he consistently and persistently followed. He ever kept in view the main fact that parliamentary and public recognition can never be accorded to the commercial side of the business of the chemist and druggist, and that protection of the professional side must be won by the exhibition of special fitness in the individuals who claim to work for the public safety. Hence the promotion of sounder education and technical training, the institution of research work, and the perfection of machinery of examination, which must be forever identified with Mr. Carteighe's name. And hence, too, the metamorphosis in the school and its equipment, the foundation of the Research Laboratory, the development of the Journal, the Museum, and the Library, which earned for him the sobriquet of the 'spendthrift president.' But who shall say that the money was squandered? Surely not his successors, who have been enabled to harvest in many of the fields he has ploughed!"

The American Pharmaceutical Association was indebted to Michael Carteighe, and members who were present in Chicago at the World's Fair meeting, in 1893, will never forget him. He was there in several capacities. At that time he was President of the British Pharmaceutical Conference, our sister organization. He was associated with Sir Richard Webster, now Lord Chief Justice of England, and J. Fletcher Moulton, now Lord Justice, and other distinguished personages. He was given an enthusiastic greeting both in the American Pharmaceutical Association and the Seventh International Pharmaceutical Congress, and he was the bearer of the Hanbury gold medal to our beloved Professor Maisch.

The closing years of his life were marked by many pathetic incidents. He severed his long connection with business in 1907. In 1908, he became totally blind, but he courageously attended to his duties, and never lost his cheerfulness, and displayed at times, amazing energy and intellectual grasp. He was the British lion of Pharmacy, fighting against tremendous odds. He had lost his charming helpmate and loving companion in 1905; the sight of his colleagues and friends was denied him, and he could only recognize them by the inflection of their voices. Though he had scaled Alpine heights, he had now to be led by the hand of a little child. Still that great heart continued to pulse and vibrate with the one thought which dominated his life—service to his fellow man.

The brief introduction which Americans had in 1893, furnished a most transitory glimpse of Michael Carteighe; but it is meet and right that some appreciation of this great man's services should be placed on the official records of the American Pharmaceutical Association. And his life should stimulate us who remain, to inspire our young men, who are coming forward, to devote themselves to such a life in the great cause of unselfish service in bettering the condition of our fellow-craftsmen, and raising the standard of Pharmacy throughout the world.

"A man whose soul is pure and strong, whose sword is bright and keen,
Who knows the splendour of the fight and what its issues mean;
Who never takes one step aside or halts, though hope be dim,
But cleaves a pathway through the strife, and bids men follow him."

# Reports of A. Ph. A. Committees

## THE PROGRESS OF PHARMACY

Abstracts from the Report on the Progress of Pharmacy for the year 1911, by C. Lewis Diehl, Reporter:

(Third Installment.)

*Alkaloids: Method of Volumetric Estimation Prescribed in Pharm. Germ. V.*—In a review of the directions of the Pharm. Germ. V for the volumetric estimation of alkaloids, Dr. R. Gaze observes that the shaking out of the original alkaloid solution with hydrochloric acid of ½% is usually not attended with any difficulty. Clarification may be hastened under circumstances by the addition of a little more acid and gentle rotation; or, in obstinate cases, by filtration through a small filter containing a little tuft of cotton. The shaking out with chloroform, however, after rendering the acid extractions alkaline, sometimes occasions considerable trouble. The chloroform separates in minute drops which will not coalesce. In such cases, coalescence may be effected by carefully heating the separatory over a water bath; or, by using at first only a portion of the chloroform (2.5 Cc.) and, after shaking several minutes vigorously, and subsidence of the chloroform in small drops, adding 5 Cc. more of the choloroform and then gently shaking the mixture to and fro, holding the separatory in a horizontal position.—Apoth. Ztg. No. 31, 301.

*Quinine: Estimation as Acid Citrate.*—The results of the estimation of quinine in organic liquids, such as urine, by direct extraction of the alkaline liquid with ether, are very unreliable, the quinine obtained being contaminated with resinous and coloring matter. To obviate this source of error, Nishi proposed a method in 1909 ("Analyst," 34, 443), by which the quinine, dissolved in ether, is precipitated as acid citrate by the addition of an ethereal solution of citric acid. T. Cockburn and J. W. Black now confirm the accuracy and reliability of this method by a series of estimations carried out with it, but propose a modification of the method which renders the details of the process described by Nishi less cumbersome. As claimed by Nishi the compound formed is of constant composition, corresponding to an acid citrate having the formula $C_{20}H_{24}N_2O_2.C_6H_8O_7$, containing theoretically 62.79% of quinine, while in practice an average of 62.95% was obtained by these authors and 62.57% by Nishi. The general characteristics of the acid citrate also corresponds with those given by Nishi. The compound is almost completely insoluble in ether, slightly more soluble in cold water and in alcohol, but readily soluble in hot water. Without going into the details of the method, which may be consulted in the original, it may here be stated that the impure quinine, obtained by the usual shaking out process and completely dried is dissolved in anhydrous ether, precipitated with a specified quantity of saturated ethereal solution of citric acid, allowed to stand 24 hours, the precipitate collected in a filter-tube, washed with specified quantities of ether, and dried to constant weight. The saturated solution of citric acid is obtained by dissolving citric acid, previously dried *in vacuo*, in anhydrous ether.—Pharm. Journ. and Pharmacist, Sept. 16, 1911, 380-381.

*Arsenic: Possible Fallacy of Fleitmann's Test.*—In a recent case of dietetic arsenical poisoning, it was found expedient to examine the urine of the affected person for traces of arsenic some six weeks after the poison had been taken, the medical man who undertook the examination, employing the well-known Fleitmann's test, and finding by this test that arsenic was still being excreted. Walter J. Dilling, doubting the probability of arsenic being excreted in the urine six weeks after the ingestion of a single subtoxic dose, performed control tests by means of Reinsch's and Marsh's methods. These proved completely negative, while Fleitmann's reaction appeared to indicate the presence of arsenic in this particular sample of urine, and also in a sample of normal urine. This reaction

depends on the reduction of silver nitrate by means of arsenuretted hydrogen, generated from the material under examination, to metallic silver, causing a purplish-black spot to appear on paper impregnated with the reagent. On looking into the matter to discover the cause of this reaction from urine free from arsenic, the author found that uric acid was the principal substance responsible for the result, but that this reduction will only occur if steam issuing from the mouth of the tube containing the reacting material comes in direct contact with the moistened silver-nitrate paper placed over it. If the reacting material is heated only until a current of hydrogen bubbles is evolved *and no longer*, and the silver-nitrate paper then placed over the mouth of the tube, the danger of reduction by steam is avoided. The author finds that other members of the xanthine series, besides uric acid, such as caffeine, theobromine, xanthine, and guanin, will also cause the purple-black spot resembling the arsenical reaction under the conditions described.—Phar. Jour. and Pharmacist, Dec. 16, 1911, 811.

*Phosphoric Acid*: *Volumetric Methods of Estimation.*—After a comparative review of the different methods for the quantitative estimation of phosphoric acid described in the literature, W. Strecker and P. Schiffer arrive at the conclusion that the volumetric method with uranium salts is quite as accurate as the gravimetric method usually relied upon. They furthermore find that the method depending on the precipitation of phosphoric acid with volumetric silver nitrate solution in acetic acid solution, and titration of the excess of silver nitrate with ferrous cyanide, gives values which are in no respect less accurate than those obtainable by gravimetric methods.—From Zschr. f. analyt. Chem., 1911, No. 8.

*Chlorides*: *Estimation of Bromides.*—Otto Herting recommends the following new method for the detection and estimation of chlorides in bromides, which is based upon the observation that when bromides are heated with lead peroxide in acetic acid solution the bromine is liberated, whereas the chloride remains unchanged: 3 Gm. of the bromide, 6 Gm. lead peroxide, and 50 Gm. Acetic Acid (50%) are heated together in a 200 Cc. flask on an asbestos plate, rotating the flask occasionally, until bromine vapor ceases to be eliminated and the mixture begins to assume syrupy consistence; whereupon the flask is removed from the fire. The cooled mixture is diluted with water, filtered and the filter well washed; then 20 Cc. of concentrated nitric acid are added to the filtrate, followed by 15 Cc. of 1/10 N. silver nitrate solution, and after the further addition of 5 Cc. of ferric nitrate, it is titrated with 1/10 N. potassium ferricyanide solution.—Pharm. Ztg. LVI (1911), No. 25, 253.

*Hexamethylenamine*: *Quantitative Estimation in Urine.*—F. Schröter recommends the following method for the quantitative estimation of hexamethylenamine in urine: To 1000 Cc. of the urine 10 Cc. of 25% acetic acid are added (to prevent subsequent precipitation of creatinine) and the mixture is precipitated with 80 to 120 Cc. of solution of corrosive sublimate, saturated at 30° C. After subsidence, the precipitate is collected on a filter, washed with corrosive sublimate solution, transferred to a flask with 10 to 15 Cc. of concentrated solution of sodium chloride and digested on the water bath. The hexamethylenamine-corrosive sublimate compound ($C_6H_{12}N_4.2HgCl_2$) is thus dissolved, while the uric acid precipitated with it remains undissolved. The solution is filtered and the mercury precipitated as oxide from the filtrate by means of potassium hydroxide. The precipitated mercuric oxid being now removed by subsidence and filtration, the filtrate is treated by Kjeldahl's method for the estimation of nitrogen and the quantity of hexamethylenamine present in the urine calculated from the figures so ascertained.—Arch. f. Exper. Pathol. u. Pharmakol, 1911, 161.

*Plants*: *Conservation of Color and Appearance.*—Wimmer describes a method for the conservation of plants (herbarium specimens) which consists in impregnating them with a saturated solution of naphthalin, to which, in order to remove its alkaline reaction on violet and red coloring matters, 1 or 2 drops of a concentrated solution of salicylic acid in absolute alcohol are added for each 100 Gm. Simple immersions into this solution usually suffices. Tender plants should be treated by means of a drop-glass, while coarser, fleshy plants must be immersed in the solution for some time. Hollow plant-parts, such for example as bell-shaped flowers, are best coated on the interior and then

on the outer surface. By the described method the natural colors of plants are perfectly preserved.—Schweiz. Wschr. f. Chem. u. Pharm. XLIX (1911), No. 15, 210; from Oesterr. Botan. Zschr. LX, 202-204.

*Medicinal Plants: Sterilization and Drying.*—Em. Bourquelot, discussing the question of preserving and drying plants, observes that the soluble ferments contained in them continue to exert their oxidizing and hydrolytic action during the process of drying, thus causing the loss of a large proportion of their active constituents. It follows that a preliminary sterilization is necessary to prevent this untoward change, and this can be accomplished only by immersing the plant, immediately after collection in boiling alcohol, most conveninetly in an apparatus specially devised by the author and his collaborator Hérissey. The question of what is the best method for the subsequent drying is, however, as yet an open one. Possibly, the method of drying the plants in a vacuum at O°C, as proposed by Choay, may prove such; but, fortunately, it is found in practice that if the methods of drying commonly in use are carefully conducted, the loss of active constituents by fermentative action is reduced to a minimum, and preliminary sterilization can be omitted if the plants are rapidly and carefully dried immediately after their collection. The author finds a criterion by which the proper execution of the drying process may be estimated in the fact that the content of saccharose is increased proportional to the drying period in the roots, and decreased in the leaves.—Journ. de Pharm. et Chim, 1910, No. 4 .

*Juniperus Procera,* Hochst: *Examination of a Useful East African Cedar.*—Schimmel & Co. recently received for examination a parcel of the wood of an East African species of cedar, of which large forests have been discovered in German East Africa, and which is apparently very suitable for pencil-making. According to Dr. Giessler this wood was derived from *Juniperus procera,* Hochst, a tree which occurs in the mountains of Abyssinia and Usambara, as well as on the slopes of Kilmanjaro and Kenia, growing at an altitude of from 4500 to 9000 feet and in Usambara forming extensive forests. In its anatomical structure the wood bears a close resemblance to that of *Juniperus virginiana.*

*The Volatile Oil* was distilled from two kinds of raw material—shaving and short planks. *The oil from the shavings* (yield 3.2%) was a deep yellow liquid, had a distinct odor resembling vetiver, and gave the following constants: $d_{15}$, 0.9876; $ND_{20}°$ 1.50893; acid val., 8.4; ester val., 8.4; ester val. after acetylization, 70. Soluble in 1.6 vols. ad more of 80% alcohol, and in one-half its own vol. and more of 90% alcohol. The Oil from the *short planks* (yield 3.24%) formed at ordinary temperature a semi-solid mass studded with crystals. When drained off from the crystals the oil gave the following constants: $d_{15}°$ 1.0289, $ND_{20}°$ 1.51011, acid v., 27.06; ester v., 7.93; ester v. after acetyl., 89.6. The oil was soluble in 2 vols. a. m. 80% and in one-half its own vol. 90% alcohol. The crystals consisted of cedar camphor. Schimmel's Rep., Oct., 1911, 105-106.

*Coniferous Seeds: Characters of Their Fixed Oils.*—C. Grimme remarks that, in view of the fact that the fatty oils from the seeds of some conifers are valuable constituents of lacquers and varnishes, on account of their great drying properties, it is a matter for surprise that very little has been published in regard to the characters of these oils. Examination of the oils from the seeds of nine different conifers gave the results recorded below. Eight of the species are European, while the ninth, Pinus Gerardiana, from the East Indies, is an article of commerce. Omitting the tabulated statement of the constants determined by the author, which must be referred to in the abstract quoted, it may be stated that all the oils had strong drying properties—the other characters and yield being as follows:

(1) *Pinus silvestris,* L. (*Pinus pinaster,* Ait; *Pinus maritima,* DC.). Yield: 32.1%. Very viscous, brownish-yellow, aromatic turpentine-like odor and taste.

(2) *Pinus montana,* Mill (*Pinus pumilio,* Haenke; *Pinus Mughus,* Scop.). Yield: 29.6%. Thick, yellow, showing a green opalescence in reflected light; aromatic turpentine-like odor and taste.

(3) *Pinus cembra,* L. Yield: 35.7%. Very viscous, yellow; aromatic odor and pleasant sweetish taste.

(4) *Pinus picea,* L. (*Abies pectinata,* DC.; *Pinus abies,* Du Roi; *Abies Alba,* Mill; *Abies picea,* Lam.; *Abies taxifolia,* Desf.; *Abies vulgaris,* Poir; *Abies excelsa,* Lk.). Yield:

32.8%. Brilliantly clear, brown-yellow; aromatic turpentine-like odor and taste.

(5) *Pinus abies,* L. (*Picea vulgaris,* Lk.; *Abies excelsa,* DC.; *Pinus picea,* Du Roi; *Pinus excelsa,* Lam.). Yield: 31.6%. Golden yellow; aromatic odor and taste.

(6) *Pinus pinea,* L. Yield: 21.8%. Thick, brown; pleasant odor and taste.

(7) *Pinus Gerardiana,* Wall. Yield: 30.7%. Very viscous, greenish-yellow; pleasant aromatic odor and taste.

(8) *Cupressus sempervirens,* L. Yield: 10.8%. Green, turbid at ordinary temperature from separation of crystals; characteristic aromatic odor and taste.

(9) *Thuja occidentalis,* L. Yield: 15.0%. Green, rather thick, slightly turbid at ordinary temperature; characteristic aromatic odor and taste.—Chem. Ztg., Aug. 29, 1911.

*Camphor: Loss by Vaporization when Stored in Paper Cartons.*—Alex. Gunn directs attention to the loss, not usually taken into account, when "Flowers of Camphor" is stored in cardboard cartons, as is now the prevalent practice. Such a carton, containing about 10½ oz., lost 250 grains in weight when stored in a warehouse, not artificially heated, during winter's month, equal to 11% per annum—though it would have been more likely 15% if stored during the entire year, including the six summer months.—Pharm. Journ. and Pharmacist, Dec. 16, 1911, 811.

*Camphor-Trees: Abundant Occurrence in German East Africa.*—D. E. Hutchins, lately Conservator of Forests, communicates some interesting information on the natural occurrence of camphor-trees in German East Africa. According to this authority, the camphor-tree is abundant and shows a good natural production in a forest situated in the neighborhood of Wilhelmstal and leased by a Mr. Wiese. At one place in the West Usambara Mountains, for example, Hutchins counted 26 seedlings of camphor on 20 square yards. Their appearance, he states, was more vigorous than that of the suckers which constitute 99% of the reproduction in British East Africa. Unfortunately, Hutchins omits to state whether the tree is botanically allied to the true camphor-tree (Cinnamomum Camphora). Hutchins regards it as curious that neither the botanical staff at the Imperial German Biological-Agricultural Institute at Amani nor the forest officials at Wilhelmstal had recognized the tree.—From Agric. Jour. Brit. East Africa, through Chem. and Drug. 79 (1911), 18.

*Rheum Palmatum: Identification as the Source of Medicinal Rhubarb.*—Dr. C. C. Hosseus, having received from Dr. Albert Tafel, the well-known Tibetan explorer, his interesting botanical collection for examination, had the opportunity of making a thorough study of the botanical source of medicinal rhubarb as revealed by five rhubarb plants included in this remarkable collection. Beginning his work in 1909, in the Botanical Museum at Berlin, it has just been completed in the Kew-Herbarium, London, with results which justify the conclusion that the best medicinal rhubarb is derived only from *Rheum Palmatum,* L., thus confirming the previously expressed view of Maximovicz, Tschirch, and Wilson, that the best rhubarb comes from *R. palmatum,* and that this species is the one that should be cultivated. The view that was formerly taken, that the "Southern" rhubarb from Szechuan comes from *R. officinale,* and the "Northern," from Kuku-noor, from *R. palmatum,* var. *R-tanguticum,* has given way to that which regards *R. palmatum* as the true source. The error is explained by a statement of Dr. Tafel's that the Tibetans dig the roots of other kinds of rhubarb and make a show of drying them, and profess that they obtain medicinal rhubarb from them, in order to mislead Europeans. Dr. Tafel himself collected specimens of *R. spiciforme,* with which the Tibetans tried to deceive him in this way. Another error which has got into the literature of the subject, which is now cleared up, is in regard to the use of the terms "high-dried" and "sun-dried." It has been supposed that the "high-dried" rhubarb was dried by artificial heat, but it appears that this is not so; most of the rhubarb that is gathered is peeled and dried at once, the rhizomes being strung on lines stretched from one tree to another, in the cedar woods where the best Shensi rhubarb is known as "sun-dried." "High-dried" rhubarb is dried in a shady part of the houses, usually under the roofs; the term "high" refers to its position, and not to the temperature employed.

In the oldest literature of the subject it is stated that the drug is obtained from one species, which comes from Tanguten land. Some confusion has arisen through the use

of the names Tangutans and Tibetans, which have been supposed to indicate different peoples; but the fact is that the whole of Eastern Tibet, from Lake Kuku-noor in the north to the Himalayas in the south, is inhabited by one people, speaking Tibetan, who call themselves Tibetans or Tangutans indifferently, the names Tangut and Tibet both referring to the country, like the names Cathay and China. Prof. Tschirch has received some seeds from Dr. Tafel, and these under the care of the head gardener, Mr. Schenck, have germinated splendidly, so that a reasonable hope is entertained that the plant will again be prevalent in European gardens.—Arch. d. Pharm. 249 (Aug. 26, 1911), 419-424.

*Indian Hemp: Production in Greece.*—L. Rosenthaler, reporting the result of a chemical comparison of Grecian Cannabis Indica with Indian hemp produced in India, says that the cultivation of Indian hemp in Greece is confined to a limited area in the neighborhood of Tripolitza, where in normal years from 3 to 4 million kilos of the herb are produced—the entire product being converted into hashish in Tripolitza itself during the months of December and January, in which months dry north winds prevail; the yield is about 10 percent. The hashish is not used in Greece, but is exported, part to Europe and part, indirectly, to Egypt. A sample of Grecian hemp was examined in comparison with a sample of the Indian drug; the former gave 23.9 percent. soluble in alcohol and the latter 21.2 percent. The Grecian drug gave 0.390 percent. of volatile substance, which absorbed 0.4344 of iodine; the Indian gave 0.316, which absorbed 0.3956 of iodine. Cannabinol was determined by distilling 25 Gms. in steam until 2 litres of distillate was collected, thoroughly extracting this with ether, drying the ethereal liquid with anhydrous sodium sulphate, and distilling off the ether; the residue was dried for twenty-four hours in a desiccator, weighed, and the amount of iodine which it would take up determined by the method of Messinger and Vortmann for the determination of phenol. The results of this investigation, although not conclusive as regards the relative activity of the two drugs, cannot be regarded as being unfavorable to the Grecian drug.—Apoth. Ztg. XXVI (1911), No. 65, 678.

*Oenanthe Crocata*, L.: *Proximate Examination.*—Frank Tutin has subjected *Oenanthe Crocata*, L., a poisonous Umbellifer common in England and Western Europe, to proximate examination, the material consisting of the entire dried plants which had been specially collected for the purpose in early spring, and therefore represented chiefly the tuberous roots. These, which somewhat resemble parsnips, were found to be devoid of enzyme, and no part of the plant, at any stage of growth, contained an alkaloid.

An alcoholic extract of the plant, when kept for some time deposited an amount of crystalline cane sugar equivalent to 3.8 percent. of the weight of dried material employed. This extract, when distilled in a current of steam, yielded a yellow essential oil possessing a somewhat unpleasant odor. This oil had the following constants: d $15°/15°=0.9381$; aD$+1°16'$ in a 25 Mm. tube. From the portion of the alcoholic extract which was soluble in water there were isolated a small amount of a colorless crystalline substance (m.p. 83°) which, on keeping, assumed a purple color. It also contained some amorphous products and a very large amount of dextrose and laevulose.

The portion of the extract which was insoluble in water consisted of a dark-colored, viscid resin amounting to nearly 3 percent. of the weight of the plant employed. From this material the following compounds were isolated: Triacontane, $C_{30}H_{62}$; hentriacon-$C_{31}H_{64}$; a phytosterol (m.p. 135°); ipuranol, $C_{28}H_{38}O_2(OH)_2$; palmitic acid; and a mixture of unsaturated acids, consisting chiefly of linolic acid. The greater amount of the material insoluble in water was, however, of a resinous nature. The neutral portions of the petroleum and ether extracts of this resin represent the toxic principle of the *Oenanthe crocata.*—Pharm. Jour. and Pharmacist, Aug. 26, 1911, 296-298.

*Fern Rhizomes: Anthelmintic Value of Various Sorts.*—In view of the statement that the ethereal extract of *Dryopteris dilatata* is at last four times as active as the corresponding extract of the official *Aspidium filix-mass* rhizome, and has therefore been suggested to replace male fern in the various pharmacopœias, H. Rosendahl has examined a number of anthelmintic fern rhizomes, his results confirming the superiority of *Dryopteris dilatata.* The yield of ethereal extract is about the same (10%); but while it takes from 8-10 Cm. of oleo-resin of Aspidium to

drive off the Bothricephalus latus, it requires only 2 Gm. of the oleo-resin prepared from the rhizome of *Dryopteris dilatata*, or 4 Gm. of that from *D. dilatata* var. *spinlosa*—the latter yielding, howeer, as much as 17% of oleo-resin. The rhizomes of other ferns yielded very small percentages of oleo-resin: *Filicis aquilini*, 2%; *Filicis feminae*, 0.9%; *Filicis Alpetris*, 0.7%. Under the microscope these extracts exhibit various crystalline structures which serve well for their identification.—Svenck Farmaceutisk Tidskrift, 1911, No. 5, 85-89.

*Extract of Male Fern: Frequent Adulteration with Castor Oil.*—Ernest J. Parry has examined twenty samples of extract of male fern obtained from various sources, and found them, with a single exception, adulterated with castor oil, amounting to from 30 to 60%. These adulterated extracts were all of the same type, and much brighter green in color than the genuine extract. The author has determined the

*Constants of Genuine Extract of Male Fern*, carefully prepared according to the official process by Mr. J. C. Umney, to be as follows: Sp. gr. at 15, not below 1.000, usually 1.025.

*Refraction Index* at 20°, not below 1.500, usually 1.5050-1.5090.

*Solubility in Petroleum Ether*, complete in 10 volumes, with exception of a little flocculent matter, but no oily separation.

*Saponification Value*, 230 to 250; unsaponifiable matter not above 8 to 11%.

*Fatty Acids*, should have a mean combining weight of from 240 to 255.

*Crude Filicin*, determined by the Pharm. Helv., should not be below 20%, usually 22 to 23%. This is regarded as of greatest importance—the test being carried out as follows: 5 Gm. of the extract are dissolved in 30 Gm. of ether, and the solution is well shaken with 100 Gm. of a 3% solution of barium hydroxide for 5 to 10 minutes. After complete separation, the aqueous liquid is filtered, and 85 Cc. of the filtrate (=4 Gm. of extract) is acidified with 2.5 Cc. of strong hydrochloric acid and shaken out four times with ether. The ethereal extracts are mixed, filtered, evaporated, and the residue is dried at 100° to constant weight.—Pharm. Jour. and Pharmacist, Dec. 9, 1911, 778.

*Oleoresin of Male Fern: Dose Depending on Method of Administration.*—While the German Pharmacopœia prescribes a maximum daily dose of 10 Gm., Dr. Drenkhaw has hitherto always given extract of male fern in doses of 15 to 20 Gm. to adults and 8 to 10 Gm. to children without ever observing symptoms of poisoning. This is perhaps due to the method of administration adopted; the poisonous principle, filicic acid is nearly insoluble in water, but soluble in alkalies and fats, and these are therefore carefully avoided, in order that filicic acid shall not be absorbed when in the intestine. A dose of cascara or rhubarb is first given, if necessary, but castor oil and alkaline laxatives are avoided; all fat food is forbidden on the day on which the extract of male fern is given and the following day. A large quantity of raspberries is given overnight, and in the morning a cup of sweet black coffee, without bread, and after an hour's interval 3 Gm. of male extract every ten minutes, or 5 Gm. of male fern every fifteen minutes, with sweetened diluted lemon-juice or solution of citric acid; the quantity of the extract thus taken in an hour is 18 to 20 Gm. If evacuation of the bowels does not occur within an hour after the last dose, it is followed by a dose of 0.6 Gm. of calomel.—Apoth. Ztg. from Münch. Med. Wschr., 1911, 2020.

*Pine Needle Oil from Pinus Pumilio: New Oxygenated Constituents.*—E. Bőcker and A. Hahn have isolated several new oxygenated bodies from the oil of the needles of *Pinus pumilio*. An oil, which had been freed from terpenes and sesquiterpenes (b. p. 85° to 178°; 13 MM.), was split into several fractions. The fraction boiling between 148° and 160° yielded a liquid of faint balsamic odor, having the elementary formula $C_{15}H_{26}O$, which is probably an *aldehyde*. The fraction boiling between 127° and 148° (13 MM.) yielded a laevoratatory body, $C_{15}H_{24}O$, which is probably a *ketone*. The third fraction, boiling between 87° and 95° (14 MM.), yielded a volatile oil possessing the peculiar aroma of pumilio pine needle oil, to which the authors have given the name

*Pumilone.*—It has the formula $C_8H_{14}O$ and possesses the following properties: It is a saturated body and is present in the original oil in the amount of about 1 to 2%.—From Jour. f. Prakt. Chem. II, 83 (1911), 489.

*Olive Oil: Method of Bleaching Practiced in Italy.*—According to a French Consular report, consumers of olive oil are coming more

and more to give preference to an oil of pale amber color, in place of the natural golden yellow or greenish, and the producers of the oil are accordingly driven to removing the color of the oil by artificial means. Citric and tannic acids are both employed for this purpose, especially the latter. If much color is to be removed, about 5 percent. of tannic acid is used; for medium-colored oil, 3 percent. suffices, and for paler oils from 1 to 2 percent. The tannic acid is dissolved in water, the solution added to the oil, and mixed for fifteen minutes; after half hour the mixture is poured into another vessel, and some hours later it is poured back into the first and allowed to stand for three days, when the oil is drawn off. Some oils can be sufficiently decolored by water alone, the oil being broken up into small drops and allowed to fall into water from a height of several metres. This method is most successful in the open air in bright, sunny weather.—Schw. Wschr. f. Chem. u. Pharm. XLIX (1911), No. 34, 476.

## REPORT OF THE COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the JOURNAL in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, Geo. M. Beringer, 501 Federal St., Camden, N. J.

## APPROVED MONOGRAPHS SUBMITTED AS STANDARDS FOR UNOFFICIAL DRUGS AND CHEMICAL PRODUCTS.

(Continued from February issue—page 168.)

### FERRI LACTAS.

IRON LACTATE.

Ferrous Lactate.

$$Fe\ (C_3H_5O_3)_2+3H_2O = 288.$$

It should contain not less than 97 per cent of pure ferrous lactate. Keep in well-stoppered bottles.

A greenish white crystalline powder or crystalline masses, having a slight characteristic odor and a mild, sweet, ferruginous taste.

Slowly but completely soluble in 40 parts of water, and in 12 parts of boiling water; freely soluble in solution of alkali citrates yielding a green solution; almost insoluble in alcohol.

When strongly heated, the salt froths up, gives out dense white, acrid fumes, chars and finally leaves a brownish red residue.

The aqueous solution has a greenish-yellow color, a slightly acid reaction and gives a deep blue precipitate with potassium ferricyanide T. S. and a light blue precipitate with potassium ferrocyanide T. S.

A 2 per cent aqueous solution of the salt should not afford with lead acetate T. S. nor, after acidulation with hydrochloric acid, with hydrogen sulphide T. S. more than a whitish opalescence (limit or absence of citrate, tartrate, malate, etc., and of foreign metals).

The aqueous solution (1 to 20) acidulated with nitric acid, should not afford more than a slight opalescence with barium chloride T. S. (limit of sulphate) or with silver nitrate T. S. (limit of chloride).

If 25 Cc. of the aqueous solution (1 in 50) mixed with 5 Cc. of diluted sulphuric acid, be boiled for a few minutes, then precipitated by an excess of potassium or sodium hydroxide T. S., the filtrate, mixed with a few drops of alkaline cupric tartrate V. S., and heated to boiling, should not afford a red precipitate (absence of sugar).

If a portion of the salt be triturated with strong sulphuric acid, no offensive odor should be developed (absence of butyric acid), nor should any gas be evolved (ab-

sence of carbonate), and the mixture, after standing for some time, should not assume a brown color (absence of sugar, gum, or other readily carbonizable impurities).

If 1 Gm. of Ferrous Lactate, contained in a porcelain crucible be moistened with nitric acid, and carefully ignited, it should leave a residue of ferric oxide weighing not less than 0.275 nor more than 0.278 gm. This residue should not have an alkaline reaction upon litmus paper, nor yield anything soluble to water (absence of *foreign salts*).

## KAVA KAVA.

METHYSTICUM.

Kava Ava.

The rhizome and roots of *Piper methysticum*, Forster (Fam. *Piperaceae*) a shrub indigenous to the Sandwich Islands.

Consisting of a large, irregular, knotty crown, often 12 cm. or more in diameter, from which proceed long, cylindrical, tough, nearly simple roots, which tend to fray out into bare separated fibro-vascular bundles; externally dark-brown or blackish, internally white, the crown soft, light, spongy, and granular and very starchy. Odor faint, but characteristic. Taste aromatic and pungent, slightly bitter, more or less local anaesthesia resulting.

Upon incineration Kava Kava should yield about 7 per cent of ash.

## KOLA.

KOLA.

Kola (or Cola) Nuts. Soudan Coffee.

The dried cotyledons of several species of *Cola* (Fam. *Sterculiaceae*), corresponding to the following description:

Irregularly plano-convex, broadly oval, or approaching circular, in outline, 2.5 to 5 cm. long, or triquetrous longitudinal sections of such bodies; brown, with the outer surfaces slightly incurved and sharp; heavy, hard and tough; odorless and having a slightly astringent taste.

Upon incineration Kola should yield not over 3 per cent of ash.

When assayed by process of the U. S. P. VIII for Guarana, Kola should yield not less than one per cent caffeine.

## KOLA RECENS.

FRESH KOLA NUTS.

The entire and undried seeds of *Cola acuminata* (Beauv). Schott and Endl. and other species of *Cola*. (Fam. *Sterculiaceae*).

Fresh Kola consists of a cartilinaginous testa of a bright purplish to a dull brownish color, and containing 2 to 5 cotyledons.

From 30 to 40 mm. long, nearly as broad and about two-thirds as thick, irregularly ovoid and obscurely triquetrous, with blunt angles; externally varying from bright-purple, or occasionally white, to a dull pale brown; testa thickish, leathery or cartilaginous; exalbuminous, the embryo consisting of 2 to 5 fleshy cotyledons of a whitish or pinkish color and a bitterish and somewhat astringent taste. Upon incineration Fresh Kola should yield not more than 2.5 per cent of ash.

Fresh Kola, when assayed by the process given under Guarana in the U. S. Pharmacopoeia VIII., should yield not less than 9.75 per cent of caffeine.

## MAGNESII SULPHAS EXSICCATUS.

DRIED MAGNESIUM SULPHATE.

Magnesium Sulphate dried at 100° C. and corresponding to from 77.5 to 81.5 per cent absolute Magnesium Sulphate $MgSO_4 = 120.39$.

Dried Magnesium Sulphate may be prepared by heating (with stirring) 100 parts of crystallized magnesium sulphate in a tared porcelain dish in a drying oven first at a temperature of 60° C. (140° F.) to 70° C. (158° F.) and then at a gradually rising temperature until the substance has lost from 37 to 40 per cent of its weight.

A fine white powder, without odor, and having a cooling, saline, bitter taste. It is almost completely soluble in water. When exposed to air it absorbs moisture.

An aqueous solution of the salt (1 in 40) should be neutral to litmus paper.

When mixed with ammonium chloride T. S. and ammonia water, the aqueous solution of the salt (1 in 40) yields with sodium phosphate T. S. a white, crystalline precipitate. With barium chloride T. S. the aqueous solution of the salt yields a white precipitate insoluble in hydrochloric acid.

Ten Cc. of the aqueous solution of the salt (1 in 200) should not respond to the time limit test for heavy metals prescribed in the United States Pharmacopoeia VIII. Five Cc. of the aqueous solution of the salt (1 in 40) should not respond to the modified Gutzeit's test for arsenic, United States Pharmacopoeia VIII.

If from 0.200 Gm. to 0.300 Gm. of dried magnesium sulphate be dissolved in 50 Cc.

of water, the solution filtered if necessary, and if 10 Cc. of ammonium chloride test solution and sufficient ammonia water to render the mixture alkaline, be added in the order named, shaking after the addition of each reagent, the mixture allowed to stand for 12 hours, the precipitate collected in a tared Gooch crucible, washed with 1 per cent ammonia water until free from chlorides, dried, heated to low redness for 15 minutes, cooled and weighed, the weight of the resultant magnesium pyrophosphate should correspond to at least 77.5 per cent of pure anhydrous magnesium sulphate ($MgSO_4$).

## FOLIA VERBASCI.

MULLEIN.

Mullein Leaves. Flannel Leaf. Blanket Leaf. Mullein Dock.

The dried leaves of *Verbascum Thapsus* Linné (Fam. *Scrophulariaceae*).

From 1 to 6 dm. long and 3 to 15 cm. broad, obovate with narrowed base, or varying to oblong or oblong-lanceolate, without true petiole, obtuse or acutish at the summit, very thick, rather tough, light yellowish-gray, densely long-tomentose. Nearly odorless and of a mucilaginous and bitterish taste.

Upon incineration Mullein leaves should yield not over 14 per cent of ash.

## OLEUM CARDAMOMI.

OIL OF CARDAMOM.

A volatile oil distilled from the seeds of *Elettaria Cardamom*, White et Maton (Fam. *Zingiberaceae*). It should be kept in well-stoppered amber-colored bottles, in a cool place, protected from light.

A colorless or very pale yellow liquid having the characteristic aromatic, penetrating and somewhat camphoraceous odor of Cardamom and a persistently pungent and strongly aromatic taste.

Specific gravity 0.924 to 0.947.

Very soluble in alcohol and dissolves readily and clearly in 4 volumes of 70 per cent alcohol.

It is dextrogyrate, the angle of rotation varying from +22° to +40° in a 100 mm. tube, at a temperature of 25° C.

## FRUCTUS PAPAVERIS.

POPPY CAPSULES.

The dried, fully grown, unripe fruits of *Papaver somniferum* Linné. (Fam. *Papaveraceae*).

Globular or ovoid, usually 3 cm. to 3.5 cm. in diameter, but varying in size, more or less sunken or depressed on the sides and contracted at the base into a sort of neck immediately above a tumid ring at the point of attachment with the stalk; crowned at the apex with the 7 to 15 rayed stigma disk; outer wall of pericarp smooth, hard, grayish-yellow to brownish-yellow, often marked with black spots; interior surface rugose, finely striated transversely and bearing thin, brittle membranaceous placentae, which extend from the sutures toward the center and bear on their faces and edges numerous minute conspicuously reticulated, reniform white seeds; odorless; taste slightly bitter.

Upon incineration Poppy Capsules yield not more than 10 per cent of ash.

For pharmaceutical purposes the seeds are to be separated and rejected.

If 1 Gm. of the powdered capsules be macerated for two hours with 10 Cc. of water containing 1 per cent hydrochloric acid, the filtered liquid should give distinct precipitates with iodine T. S. and Mayer's Reagent.

## PARÁ COTO.

PARA COTO.

Para Coto Bark.

The bark of an unidentified tree (Fam. *Lauraceae*) indigenous to Northern Bolivia.

In sections or fragments of large quills, of indefinite length, usually 3 to 6 cm. broad, the bark 5 to 15 mm. thick; of a deep-brown color throughout, the outer surface nearly smooth, lightly transversely fissured, and often very thinly scaley, the inner surface very coarsely striate; hard and heavy, but splitting and breaking readily, the fracture earthy in the outer layer, with an irregular resinous band, coarse splintery in the inner, with large yellowish-brown bast-fibers and stone-cells and darker resin tissue. Odor strong and characteristic. Taste strongly aromatic and pungent, followed by a peppery-biting sensation.

Upon incineration Para Coto yields about 2 per cent of ash.

## PHENOLPHTHALEINUM.

PHENOLPHTHALIEN.

$C_{20}H_{14}O_4 = 318.12.$

A dibasic phenol derivative (Dihydroxyphtalophenone. para-phtalein), $(C_6H_4OH)_2COC_6H_4CO$, obtained by the condensation of phenol and phtalic anhydride.

White, sometimes slightly yellowish or

pinkish, micro-crystalline or amorphous powder, odorless, tasteless and permanent in the air.

Almost insoluble in water (1-80000), only slightly soluble in boiling water (1-30000), soluble in about 10 parts alcohol at 25° C. and in about 2 parts of boiling alcohol, soluble in about 45 parts of ether at 25° C. The crystallized variety dissolves in ether with difficulty, while the amorphous goes in solution readily. Soluble in caustic alkalies with a dark red color, showing violet red at the meniscus; the alkaline solution is decolorized on the addition of an excess of acid or on boiling with powdered zinc.

It melts at 253°-254° C., forming a clear liquid of pale brownish color.

On incineration it should not leave more than 0.1 per cent of ash.

In concentrated sulphuric acid it dissolves producing an orange red color.

The solution of 1 part of Phenolphthalein in 50 parts of alcohol should be colorless (absence of resinous substances).

On shaking 1 Gm. of Phenolphthalein with 70 cc. of tenth-normal potassium hydroxide V. S. it should dissolve with a rich red color, without leaving any residue (absence of fluoran).

If 1 Gm. of Phenolphthalein be shaken with 20 Cc. of water and filtered, one-half of the filtrate, acidulated with hydrochloric acid should give no precipitate or turbidity with barium chloride T. S. (absence of sulphates); the other half, acidulated with nitric acid should give no precipitate or turbidity with silver nitrate T. S. (absence of chlorides).

## POTASSII GLYCEROPHOSPHAS.

POTASSIUM GLYCEROPHOSPHATE.

A semi-solid, colorless or yellowish mass, having a saline tase, odorless, containing about 75 per cent of absolute Potassium Glycerophosphate $C_3H_7O_3\ PO_3K_2 = 248.26$.

Very soluble in water. Insoluble in alcohol.

When exposed in a thin layer to a temperature of 140° C., until it ceases to lose weight, the loss should be about 25 per cent.

When heated to a higher temperature, it evolves inflammable vapors and at a red heat is converted into potassium pyrophosphate. The residue from ignition of 1 Gm. should weigh about 0.48 Gms. and should impart a violet color to a non-luminous flame.

The aqueous solution (1 in 20) is slightly alkaline to litmus.

On addition of lead acetate T. S. it yields a white precipitate.

Magnesia Mixture T. S., or cold Ammonium Molydbate T. S., should give no precipitate within five minutes (limit of phosphate). On warming, or after long standing, Ammonium Molydbate T. S. produces a yellow precipitate.

If 1 Gm. be thoroughly triturated in a mortar with 20 Cc. of alcohol, the filtrate, when evaporated on a waterbath, should leave not more than 1 per cent residue (absence of glycerin, organic matter, etc.).

The aqueous solution (1 in 20) should not respond to the U. S. P. time limit test for heavy metals.

## SEMEN CYDONIAE.

QUINCE SEED.

The dried ripe seeds of *Cydonia vulgaris* Pers. (Fam. *Rosaceae*), with their adhering gum, and with not more than five per cent, by weight, of other matter.

Single, or adhering in irregular masses, usually of from 2 to 10, by their dried, exuded gum, and often enclosed in a mass of such gum; 5 to 8 mm. long, 3 to 5 mm. broad, and almost as thick; ovoid, with rounded base and somewhat pointed summit, one or two sides more or less flattened or even slightly concave; anatropous, the hilum at the pointed end; externally of a deep, purple-brown color, the kernel whitish, exalbuminous, the embryo fleshy, nearly odorless, of a bitterish taste and strongly mucilaginous when chewed.

Upon incineration Quince Seed should yield not more than 6 per cent of ash.

## RHAMNUS CATHARTICUS.

BUCKTHORN BERRIES.

Fructus Rhamni cathartici. Bacca Spinae Cervinae.

The dried ripe fruit of *Rhamnus catharticus* Linné. (Fam. Rhamnaceae).

Flattened globoid or ovoid, 4 to 8 mm. in diameter, externally purple-black, wrinkled from shrinking of the mesocarp in drying; 3 to 4 celled, each cell containing a brown triangular-convex, seed-like nutlet; in the fully dried ripe fruit the pedicel is usually lacking; taste first sweetish, then nauseating bitter; colors the saliva purplish-red; odor faint, unpleasant.

On soaking in water the drupe readily as-

sumes its original globular shape, approximately 1 cm. in diameter. The expressed pulp is colored red by acids and yellow by alkalies.

An aqueous extract shaken out with ether or benzole and the latter solution shaken with 5 per cent ammonia water, the ammonia solution assumes a cherry-red color.

The unripe fruit is green to greenish-brown, firm, furrowed, pedicel usually attached; very bitter, colors the saliva greenish-yellow and is to be rejected for preparations of the N. F.

Upon incineration Buckthorn Berries should yield not over 5 per cent of ash.

## CROCUS.

SAFFRON.

Saffron. True Saffron. Spanish Saffron.

The stigmas and red parts of the styles of *Crocus sativus* Linné. (Fam. *Irideae*), containing not more than 10 per cent of yellow style-tissue and fragments of stamens and perianth.

Separate stigmas or three attached to the top of the style, about 3 Cm. long, flattish-tubular, almost thread-like, broader and notched above; orange-brown, odor strong, characteristic aromatic; taste bitterish and aromatic, but not sweet.

When pressed between filter paper the latter should not display transparent spots from the absorption of oil. When chewed it tinges the saliva deep orange yellow.

When soaked in water it should not deposit any pulverulent, mineral matter, nor show the presence of organic substances differing in shape from that described.

On agitating 10 mg. of Saffron with 1000 Cc. of water, the liquid will acquire a distinct yellow color. No color should be imparted to benzin agitated with Saffron (absence of picric acid and some other coal tar colors).

On drying 1 Gm. Saffron at 100° C., it should lose not more than 14 per cent of its weight (absence of added water).

When thus dried, and ignited with free access of air, the dry Saffron should leave not more than 7.5 per cent of ash, which should not be fusible (absence of foreign inorganic substances).

If a small portion of the dried Saffffron be powdered and placed upon an object glass, then covered with a cover glass and strong sulphuric acid be allowed to flow in under the cover glass, deep blue radiations which quickly become red and then brownish-red should be seen, under the microscope, to proceed from each of the small particles of the powder (absence of foreign inorganic substances)

Saffron should be kept in closed containers, protected from the light.

## TUBERA SALEP.

SALEP.

The tubers of various species of *Orchis* and closely related plants of the group *Ophrydeae* (Fam. *Orchidaceae*) collected while flowering, washed and dried.

Small oval or globular tubers, flattened or wrinkled rarely palmate, exhibiting at the top the scar of the stem bud; of a pale yellowish-brown color, hard, horny, semi-translucent, odorless and of a mucilaginous taste. If one part of Salep in powdered form be boiled with 50 parts of water, a stiff mucilage is formed on cooling, which is colored blue by Iodine T. S.

The powdered Salep should leave on incineration not more than 3 per cent of ash.

## VINUM XERICUM.

SHERRY WINE.

An alcoholic liquid made by fermenting the juice of fresh grapes, the fruit of *Vitis vinifera* (Fam. *Vitaceae*), freed from seeds, stems and skins, and fortifying with alcohol or brandy.

The term Sherry Wine was originally limited to that variety produced in the vicinity of Xeres, in Spain. Now, however, the term Sherry Wine means a natural wine, having a color and peculiar nutty flavor generally associated with this wine. For medicinal and pharmaceutical purposes, native wines may be used as Sherry Wine, provided that they correspond to the description and tests given below.

Sherry Wine should be preserved in well-closed casks, filled as full as possible, or in well-stoppered bottles, in a cool place.

A pale yellowsh-brown or amber colored liquid, having a pleasant aromatic odor, free from yeastiness and a fruity, pleasant and characteristic taste, without excessive sweetness or acidity, containing not less than 18 nor more than 21 per cent absolute alcohol, by volume.

The specific gravity at 25° C. should be not less than 0.987 nor more than 0.998.

If 100 Cc. of Sherry Wine be evaporated,

the residue, when dried during 12 hours on the waterbath, should amount to not less than 3 nor more than 5.5 Gm.; this residue, ignited at a low temperature and burned gradually to whiteness, moistened with a small portion of ammonium carbonate T. S. and again carefully ignited, should weigh not less than 0.25 nor more than 0.5 Gm.

To neutralize 50 Cc. of Sherry Wine should require not less than 2.5 nor more than 4 Cc. of normal potassium hydroxide V. S. (limit of free acid), litmus T. S. being used as indicator.

If 50 Cc. of Sherry Wine be acidulated with hydrochloric acid, heated, and an excess of barium chloride T. S. be added, the resulting precipitate, when collected on an ash free filter, washed, dried, ignited and weighed, should, in true Sherry Wine, weigh not less than 0.172 Gm. nor more than 0.344 Gm., corresponding to not less than 0.1 gramme nor more than 0.2 gramme of potassium bisulphate, resulting from the practice of treating must with gypsum. Native wines, which, as a rule are not thus treated, should yield not less than 0.017 Gm. nor more than 0.034 Gm. of barium sulphate corresponding to not less than 0.01 gramme nor more than 0.02 gramme of potassium bisulphate, or about 1/10 as much potassium bisulphate as Spanish Sherry Wine.

If 10 c. c. of Sherry Wine be diluted with an equal volume of water and treated with 5 drops of ferric chloride T. S. only a faint, greenish-brown color should make its appearance (absence of more than traces of tannic acid).

If 75 c. c. of Sherry Wine be acidified with 5 c. c. of diluted sulphuric acid (1 to 3), and thoroughly shaken in a separatory apparatus with a mixture of equal parts of petroleum benzin and ether, and the solvent, after separation, be transferred to a porcelain dish, allowed to evaporate spontaneously and the residue dissolved in 3 Cc. of water, the solution should not have a sweet taste (absence of saccharin), nor should it give a violet color upon the addition of a diluted solution of ferric chloride (1 to 200) (absence of salicylic acid).

## STRONTII ARSENITIS.

STRONTIUM ARSENITE.

$Sr(AsO_2)_2 = 301.62.$

It should contain not less than 95 per cent of actual strontium arsenite and should be kept in well-stoppered bottles.

A heavy, white powder, odorless and tasteless. On exposure to the air, it is slowly oxidized to arsenate.

Slightly soluble in water and alcohol, soluble in diluted acetic, hydrochloric and nitric acids.

The aqueous solution is alkaline to litmus and phenolphthalein.

For supplying tests of identity and purity, dissolve 2 Gm. of strontium arsenite in a mixture of 35 Cc. of water and 5 Cc. of hydrochloric acid. No distinct effervescence should take place (limit of carbonate).

If a loop of platinum wire be moistened with the solution and held in a non-luminous flame, it should impart to the latter an intense crimson color.

If a portion of the solution be neutralized with ammonia water, addition of potassium chromate T. S. gives a yellow precipitate, soluble in acetic acid.

Addition of hydrogen sulphide T. S. produces a lemon-yellow precipitate, which, when thoroughly washed, should be completely soluble in ammonium carbonate test solution (absence of cadmium, antimony and tin).

If 1 Gm. of Strontium Arsenite be dissolved in a mixture of 10 Cc. of water and 3 Cc. of hydrochloric acid, the solution neutralized with ammonia water, then 1 Gm. of sodium acetate dissolved in the liquid and the solution made slightly acid by the addition of acetic acid, it should not become cloudy within 10 minutes after addition of 5 drops of potassium dichromate T. S. (limit of barium).

If 1 Gm. of Strontium Arsenite be dissolved in a mixture of 10 Cc. of water and 3 Cc. of hydrochloric acid, warming if necessary, ammonia water added slightly in excess, then 3 Gm. of ammonium sulphate added and the mixture heated about 5 minutes on a waterbath, the filtrate should not become cloudy within five minutes after the addition of 5 drops of ammonium oxalate test solution (limit of calcium).

Dissolve about 0.2 Gm. of strontium arsenite in a little warm water with the aid of a few drops of hydrochloric acid, dilute to about 25 Cc. with water, add diluted sulphuric acid until no further precipitate is produced, neutralize with sodium bicarbonate and dissolve in the liquid 2 Gm. more of sodium bicarbonate; titrate with tenth-normal iodine V. S. Multiply the number of Cc. tenth-normal iodine V. S. consumed by 0.7541

and divide this product by the weight of strontium arsenite taken. The quotient represents the percentage of absolute strontium arsenite.

## THUJA.

ARBOR VITAE.

Yellow Cedar. Fine White Cedar. Tree of Life. Feather-leaf Cedar.

The recently dried young twigs of *Thuja occidentalis* Linné. (Fam. *Pinaceae*).

Twigs leafy, fan-shaped, flattened, bearing the scale-like leaves appressed in four rows; leaves of the edges boat-shaped, the intermediate flat, those at the tips of the twigs very broad, the lower elongated, all bearing conspicuous glands on the back. Odor strongly balsamic, aromatic and pungent, taste camphoraceous, terebinthinate and bitter.

Upon incineration Thuja yields about 7 per cent of ash.

## PINUS ALBA CORTEX.

WHITE PINE BARK.

Pine Bark.

The dried inner bark of *Pinus Strobus* Linné. (Fam. *Pinaceae*).

In flat pieces of very variable size and about 1 to 3 mm. thick; outer surface varying from a pale pinkish white, when fresh, to a light or rather deep yellowish brown, according to freshness, occasionally with small patches of the gray-brown periderm adhering, more or less fuzzy, and often showing small scattered pits, inner surface either lighter or darker than the outer, finely striate; fracture tough-fibrous, transverse section an outer yellowish and an inner whitish band. Odor slight, terebinthinate. Taste slightly mucilaginous, bitter-sweet and astringent.

Upon incineration White Pine Bark should yield not more than 2 per cent of ash.

## ZINCI DIOXIDUM.

ZINC DIOXIDE.

Zinc Peroxide.

A partly hydrated form of zinc dioxide ($ZnO_2$) containing not less than 45 per cent of pure zinc dioxide, when estimated by the method given below.

A heavy yellowish powder, stable in dry air; almost insoluble in water and readily soluble in diluted acids with the formation of hydrogen dioxide.

A solution of 0.1 Gm. of zinc dioxide in 5 Cc. of diluted hydrochloric acid, rendered slightly alkaline with ammonia water and re-acidulated with acetic acid, yields a voluminous precipitate upon the passage of hydrogen sulphide through the mixture.

QUANTITATIVE ESTIMATION OF ZINC DIOXIDE.

Agitate a weighed quantity, about 0.4 Gm. of zinc dioxide with 25 Cc. of water and to effect the solution of the substance add 25 Cc. of diluted sulphuric acid (1 in 5). Then add gradually tenth-normal potassium permanganate V. S. from a burette, until a permanent pink color remains after agitation. Multiply the number of Cc. of the tenth-normal potassium permanganate V. S. consumed, by 0.004833, and divide this product by the weight of the zinc dioxide taken; the result multiplied by 100 represents the percentage of pure zinc dioxide present.

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## COMMITTEE ON NATIONAL FORMULARY.

The following is the fifth installment of some of the new formulas that have been suggested for inclusion in the forthcoming edition of the National Formulary. The Committee is desirous of having them thoroughly tried by pharmacists in different sections of the country so as to avoid as much as possible unfavorable comment after the final publication of the book. Comments and criticisms based on practical experiences will be welcome. All communications should be addressed to the Chairman of the Committee,

PROF C. LEWIS DIEHL,
932 Cherokee Road,
Louisville, Ky.,

who will submit the comments to the Subcommittee having the matter in charge.

FLUIDEXTRACTUM BAPTISIAE.

Fluidextract of Baptisia.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....3 volumes
Water .....1 volume

FLUIDEXTRACTUM CHIONANTHI.

Fluidextract of Chionanthus.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....3 volumes
Water .....1 volume

FLUIDEXTRACTUM COCILLANAE.

Fluidextract of Cocillana.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....3 volumes
Water .....1 volume

FLUIDEXTRACTUM CONDURANGO.

Fluidextract of Condurango.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Diluted Alcohol.

FLUIDEXTRACTUM DIOSCOREAE.

Fluidextract of Dioscorea.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....4 volumes
Water .....1 volume

FLUIDEXTRACTUM DROSERAE.

Fluidextract of Drosera.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....2 volumes
Water .....1 volume

FLUIDEXTRACTUM ECHINACEAE.

Fluidextract of Echinacea.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....4 volumes
Water .....1 volume

FLUIDEXTRACTUM EUPHORBIAE PILULIFERAE.

Fluidextract of Euphorbia Pilulifera.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Diluted Alcohol.

FLUIDEXTRACTUM HELIONIATIS.

Fluidextract of Helonias.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Diluted Alcohol.

FLUIDEXTRACTUM NEPETAE.

Fluidextract of Nepeta.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....3 volumes
Water .....4 volumes

FLUIDEXTRACTUM RHAMNI CATHARTICI.

Fluidextractum Rhamnus Catharticus.

Reserve the first 750 Cc. and then proceed as in Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Diluted Alcohol.

FLUIDEXTRACTUM SENECIONIS.

Fluidextract of Senecio.

Process A (see N. F. III, p. 56), No. 40 powder.

Menstruum: Alcohol .....2 volumes
Water .....1 volume

FLUIDEXTRACTUM TRIFOLII.

Fluidextract of Trifolium.

Reserve the first 800 Cc. and then proceed as in Process A (see N. F. III, p. 56), No. 30 powder.

Menstruum: Diluted Alcohol.

FLUIDGLYCERATES.

Fluidglycerates are intended to be of the same strength as fluidextracts. They contain approximately 50 percent. by volume of glycerin and no alcohol. The drug should be in a No. 20 or 30 powder unless otherwise directed. For drugs that do not require either acid or alkaline menstruum they may be prepared by the following outlined process:

GENERAL PROCESS.

Drug, in coarse powder.....1000 Gm.
Glycerin ..... 500 Cc.
Water .....1500 Cc.
Chloroform Water, a sufficient quantity to make.....1000 Cc.

Mix the Glycerin and Water and moisten the drug thoroughly with a portion of the mixture, then *pack it very lightly* in a cylindrical percolator, and add enough of the menstruum to saturate the powder and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice, and having closely covered the percolator, macerate for 48 hours. Then allow the percolation to proceed slowly until the drug is exhausted, using first the remainder of the menstruum and afterward Chloroform Water. Reserve the first 500 Cc. of percolate and evaporate the remainder on a water bath, the weaker portion first, then the stronger until it is reduced to 600 Cc., then add the reserved portion and continue the evaporation until the product measures 1000 Cc. Allow the preparation to stand for a few days, then decant the clear portion and strain the remainder.

FLUIDGLYCERATUM GLYCYRRHIZAE.

Fluidglycerate of Glycyrrhiza—Fluidglycerate of Licorice.

| | |
|---|---|
| Glycyrrhiza, Russian, in No. 20 powder | 1000 Gm. |
| Ammonia Water | 60 Cc. |

Mix 50 Cc. of the Ammonia Water with 600 Cc. of the Glycerin Water menstruum, moisten the ground drug with the mixture and complete the preparation by following the General Process for Fluidglycerates, excepting that the mixed percolates are to be evaporated to 990 Cc. and the remaining 10 Cc. Ammonia Water added to the cold product.

FLUIDGLYCERATUM KRAMERIAE.

Fluidglycerate of Krameria.

| | |
|---|---|
| Krameria, in No. 20 powder | 1000 Gm. |
| To make | 1000 Cc. |

Follow the General Process for Fluidglycerates, using 600 Cc. of menstruum to moisten the ground drug.

FLUIDGLYCERATUM RHAMNI PURSHIANAE.

Fluidglycerate of Cascara Sagrada.

| | |
|---|---|
| Cascara Sagrada, in No. 20 powder | 1000 Gm. |
| To make | 1000 Cc. |

Follow the General Process for Fluidglycerates, using 500 Cc. of menstruum to moisten the ground drug.

FLUIDGLYCERATUM RHAMNI PURSHIANAE AROMATICUM.

Aromatic Fluidglycerate of Cascara Sagrada.

| | |
|---|---|
| Cascara Sagrada, in No. 20 powder | 750 Gm. |
| Fluidglycerate of Glycyrrhiza | 250 Cc. |
| Lime | 38 Gm. |
| Glycerin | 375 Cc. |
| Water | 2625 Cc. |
| Oil of Fennel | 1 Cc. |
| Oil of Cloves | 1 Cc. |
| Oil of Cassia | 1 Cc. |
| Chloroform Water, a sufficient quantity to make | 1000 Cc. |

Mix the Lime with 1500 Cc. of Water and stir in the Cascara Sagrada, moistening the drug evenly and thoroughly. Dry the moist powder by exposure to a moderate heat until air-dry. Mix the glycerin with 1125 Cc. of Water and moisten the Cascara Sagrada with 600 Cc. of this menstruum, *pack it lightly* in a cylindrical percolator and add enough of the menstruum to saturate the powder and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice, and having covered the percolator macerate the mixture for 48 hours. Then allow the percolation to proceed slowly until the drug is exhausted, using first the remainder of the menstruum and afterwards Chloroform Water. Reserve the first 375 Cc. of the percolate and evaporate the remainder on a water bath, the weaker portion first, then the stronger, until it is reduced to 450 Cc., then add the reserved portion and continue the evaporation until the liquid measures 747 Cc. When cold add the Fluidglycerate and the volatile oils and mix thoroughly. Allow the preparation to stand for a few days, then decant the clear portion and strain the remainder.

FLUIDGLYCERATUM RHEI.

Fluidglycerate of Rhubarb.

| | |
|---|---|
| Rhubarb, in No. 30 powder | 1000 Gm. |
| To make | 1000 Cc. |

Follow the General Process for Fluidglycerates, using 500 Cc. of menstruum to moisten the ground drug.

SYRUPUS IODOTANNICUS.

Syrup of Iodo-tannin.

| | |
|---|---|
| Iodine | 2.7 Gm. |
| Tannic Acid | 5.4 Gm. |
| Sugar | 800.0 Gm. |
| Distilled Water, a sufficient quantity to make | 1000.0 Cc. |

Reduce the iodine to a powder and introduce it into a flask with the Tannic Acid and 450 Cc. of Distilled Water and then heat the mixture on a water bath, at a temperature not exceeding 50° C., agitating the flask from time to time until a drop of the liquid ceases to give a blue coloration with Starch T. S. Then add the Sugar and when this is dissolved remove the flask from the water bath, allow the Syrup to cool and finally add enough Distilled Water to make the product measure 1000 Cc.

## Editorial Notes and Announcements

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Associate Editor and Reporter on the Progress of Pharmacy.

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

In giving change of address, always give both the old and the new address.

### RULES OF CENSORSHIP.

1. All contracts for advertising are accepted subject to revocation at the discretion of the Publication Committee.

2. No advertisement will be accepted for any article or service, the sale or furnishing of which is illegal in the state of publication or in any state in which the JOURNAL circulates.

3. Advertisements will not be accepted for articles belonging to the class of preparations commonly known as patent medicines, nor for any medicinal preparation advertised directly to the laity, or which is advertised in such a manner as to encourage self medication.

4. Copy which is vulgarly or extravagantly worded, or which makes extravagant claims of therapeutic virtues will not be accepted.

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### GOLDEN WEDDING ANNIVERSARY OF A. PH. A. MEMBER.

Doctor and Mrs. John F. Hancock of Baltimore celebrated the fiftieth anniversary of their wedding recently. Congratulations and tokens were sent by their many friends in various parts of the country. Dr. and Mrs. Hancock were married February 6, 1862. The members of the A. Ph. A. extend their congratulations and good wishes.

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### A CORRECTION.

Readers of the February JOURNAL no doubt understood that "Frank H. Fredericks" on page 142 was a misprint for the name of Frank H. Freericks, the efficient Secretary of the American Druggists' Fire Insurance Co.

One of the inconveniences of linotype composition is that it requires the recasting of an entire line for every correction. In the last page proof of the February issue, the name of Mr. Freericks contained a defective letter, and the correction of this resulted in the introduction of the error mentioned.

The linotype artist has been properly disciplined, and the JOURNAL tenders its apologies to Mr. Freericks.

## WEDGWOOD CLUB CELEBRATION.

The Wedgwood Club, a social organization of Baltimore druggists, celebrated its twelfth anniversary at Hotel Rennert, January 25th, and on the same occasion presented to Dr. John F. Hancock, the club historian, a handsome loving cup, in commemoration of the golden wedding anniversary of himself and Mrs. Hancock, which would occur on February 6th.

The club membership is limited to 30, and the president is selected in alphabetical rotation.

At its annual meetings the club usually entertains a guest and orator. The guest on the present occasion was Mr. Addison E. Millikin, who spoke upon "Things as They Should Be."

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## N. A. R. D. ACTIVITIES.

*N. A. R. D. Notes*, the very excellent official publication of the N. A. R. D., has always devoted a liberal amount of space to the work of the A. Ph. A. and its local branches. The latter association is now in a position to reciprocate, and expects to feature N. A. R. D. activities in the JOURNAL whenever the opportunity presents itself.

Editor Carr has kindly consented to prepare a monthly letter devoted to the principal N. A. R. D. activities, and these communications can therefore be relied upon as being both official and accurate. N. A. R. D. officers, committees and members generally are invited to utilize the JOURNAL for such announcements as they would like to present to members of the A. Ph. A.

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## THE SIXTIETH ANNUAL CONVENTION.

The headquarters of the Association during the Sixtieth Convention will be the Brown Palace Hotel, the same hostelry which housed the Association during its last meeting at Denver. Since that date, however, the hotel has been considerably modified in its interior arrangements, and has lately been refurnished and renovated throughout. The former store rooms on the ground floor have been converted into luxurious lounging rooms.

The convention will have for its exclusive use the large ball room for general sessions and section meetings; the ordinary, with a seating capacity of five hundred, for section and other meetings; a special room for Council meetings; the club room for conferences, and a large room adjoining the hotel office for registration and State Headquarters.

The Metropole, located directly across the street, is under the same management as the Brown Palace. The Metropole is a fireproof structure, and will afford one hundred rooms for the accommodation of guests.

Owing to its advantageous location, the city of Denver offers many opportunities for inexpensive side trips, either during or after the convention.

For one hundred people the transportation company will furnish a special train for a "Round the Circle" and Salt Lake City excursion. Part of the trip will be over a narrow-gauge division of the D. & R. G., which will take the party through some of the most interesting portions of mountain scenery to be found in the Rockies. Sufficient time will be afforded for viewing the most interesting portions of the scenery, and a stop of several days will be permitted at Salt Lake and City. Fare for the round trip will probably be in the neighborhood of twenty dollars.

The following round trip rates to Denver have been announced:

| | |
|---|---|
| St. Louis | $26.00 |
| Chicago | 30.00 |
| New Orleans | 46.00 |

Rates for cities farther east have not yet been named.

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## BRINGING THE ANNUAL CONVENTION TO THE BRANCH MEETING.

It will doubtless always be true that only a comparatively small proportion of the members of the A. Ph. A., or of any other national organization, will be able to attend any considerable number of the annual conventions.

In a sense, however, the annual convention may be brought to the local branch meetings by the reading and discussion of the convention papers and reports, or the more important of them, at the monthly sessions.

In these papers can be found matters of interest and improvement for everybody interested in any division of pharmaceutical work, scientific matters for those interested in scientific pharmacy, questions of legislation and education for those who are interested in these lines, besides hundreds of papers dealing with the everyday problems of the drug store.

In the same way the resolutions and ac-

tions of the annual N. A. R. D. convention can be made the subject of discussion and debate, and the benefits of that useful organization brought home to the local druggists.

The bound volumes of the past A. Ph. A. proceedings, moreover, are veritable mines of pharmaceutical wisdom from which in half an hour sufficient can be extracted to provide materials for an evening of profitable discussion.

If the A. Ph. A. is the post-graduate school of pharmacy, the Proceedings and JOURNAL are the text books, and the Branch meetings provide the lectures and recitations.

The man, or woman, who faithfully pursues the course of instruction will not fail to rank high as a pharmacist.

## Matters of General Interest

### AMERICAN CHEMICAL SOCIETY
(DIVISION OF PHARMACEUTICAL CHEMISTRY.)

During the meeting of the American Chemical Society in Washington, D. C., December 27th to 30th, the Division of Pharmaceutical Chemistry held four very interesting sessions. The Chairman's address was upon "Our Advances and Retrogressions in Pharmaceutical Chemistry."

The following papers were presented:

A. B. Adams and J. M. Doran, Smoking Opium; Its Manufacture and Chemical Composition.

L. A. Brown, An Improved Method for Assay of Aromatic Sulphuric Acid.

Jos. P. Remington, Progress on the Work of Revision of the United States Pharmacopœia.

W. O. Emery, Estimation of Antipyrine in Acetanilide or Acetphenetidin Mixtures.

W. O. Emery, Estimation of Codeine in Acetanilid or Acetphenetidin Mixtures.

F. P. Dunnington, Some Unfamiliar Facts About Familiar Detergents.

R. Norris Shreve, Suggested Modifications of the U. S. P. Assay of Opium.

M. I. Wilbert, The Influence of Patents and Trade Marks on the United States Pharmacopœia.

E. O. Eaton, Estimating Small Quantities of Morphine in Mixtures.

A. G. Murray, Estimating Small Quantities of Nitrogen.

H. C. Hamilton, The Pharmacopœial Requirements for Cannabis Sativa.

H. C. Hamilton, Notes on Cannabis Indica.

A. D. Thorburn, The Estimation of Morphine in Cough Syrups.

C. M. Pence, The Bromine and Iodometric Methods for the Volumetric Estimation of Cresol.

J. B. Williams, The Estimation of Morphine in Pills, Tablets, etc.

Frederick J. Austin, Comments on Tests of the U. S. Pharmacopœia, Eighth Revision.

J. R. Rippetoe and R. Minor, Colocynth U. S. P.

C. H. Briggs, Alcohol Assays of Pharmaceutical Preparations.

L. F. Kebler, Standards for Tincture of Ginger.

L. F. Kebler, Standards and Methods.

Atherton Seidell, A Bromine-Hydrobromic Acid Method for the Determination of Phenols.

The annual election resulted in the choice of the following officers:

Chairman, B. L. Murray; Vice-Chairman, L. A. Brown; Secretary, Frank R. Eldred; Members of Executive Committee, L. F. Kebler, Atherton Seidell.

## Communications and Correspondence

**All communications must be signed by their Authors**

### MORE EDUCATIONAL NEEDS OF THE PHARMACIST.

The article on Educational Needs, by our friend, Dr. H. P. Hynson, in the first issue of the JOURNAL brought to mind several things that from the daily experience in the conduct of a pharmacy it would be well if our colleges placed more stress upon and taught the importance thereof to their students.

Whilst we agree with Dr. Hynson that a three-year course as outlined by him is most excellent, at the same time we believe there are other things perhaps even more important than dignity that should be impressed upon the students during that third year.

Although we admit a certain amount of

pride in one's calling is highly essential yet we do not believe, nor do we think Dr. Hynson would advocate that pride or dignity be carried to the extent exemplified by a clerk in our employ a few years ago, a graduate of the Department of Pharmacy of the University at Warsaw, Russia, who insisted that his own countrymen (of whom we had quite a few customers in our then location), remove their hats when they entered the store or addressed him, as he claimed was customary in his country when a plebeian (his term) approached a professional gentleman; of course we informed him that in "the good old U. S. A." we have no plebeians, but "a man's a man for a' that," and that the highest culture as we understand it in this country means the recognizing of a fellow being even the outcast and vile, if thereby we can lead them to better and nobler things.

Nor do we desire to criticise the work of the Syllabus Committee, as we realize they are of the best our profession affords, both as to college and practical men, but sometimes the man that stands on the outside sees or experiences things that are overlooked by those in the inner circle, hence we concluded to set forth as already stated some things that from our practical experience as a proprietor and nine years' membership of a Board of Pharmacy, we deem essential.

We would suggest that, in the adoption of a three-year term at our colleges, a chair on jurisprudence be establised so as to instruct the students in the ordinary civil and business laws that are essential for every man to know who engages in a pursuit that has both professional and commercial requirements; not to the extent that would enable them to practice law, but to make them familiar with the simple facts of the laws governing business transactions, such as contracts, partnerships, corporations, real estate, etc, so they might know the relationship and responsibility of each individual in such transactions and the importance of engaging a good attorney in preparing the necessary papers therefor.

This should be followed by the laws especially pertaining to pharmacy, so that the student may understand his rights, privileges and responsibilities as a registered pharmacist, as well as assistant, when he or she becomes such. Poison Laws, their purport and necessity; Food and Drug Laws (National and State), their necessity and usefulness, should also be included.

We remember whilst a member of the Maryland Board of Pharmacy asking on several occasions the purport of the Poison Laws, but few of the aspirants for registration ever attempted to answer the question, and of those few the usual method was to quote so much of the law as the applicant happened to remember, and out of possibly two hundred, ten only gave anything like an intelligent answer; the best answer received being possibly the following: "The purport of Poison Laws is to prevent either accidental or intentional poisoning, as also the formation of vicious habits and to aid in ferreting out crime."

Most young men appearing for examination have a vague idea that the Pharmacy Law is primarily to restrict the number of pharmacies and protect the pharmacist, which we know is perfectly erroneous, as no law that is enacted for any other purpose than to benefit the people as a whole, can ever stand the test of time under our system of government.

As to the Pure Food and Drug Laws, according to our observation, the young men seem to think these have been enacted solely for the purpose of compelling the pharmacist to purchase his preparations from the manufacturer, so as to be able to show a guarantee when the inspector happens to make a purchase from him; thereby entirely overlooking the fact that these laws sustain the upright, honest, conscientious pharmacist, as well as the similarly inclined manufacturer, in legitimately conducting his business.

In conclusion, we would say, "Teach our young men all they are now being taught, add to it Dr. Hynson's dignity course, but do not neglect instructing them in what we might term pharmaceutical jurisprudence."

LOUIS SCHULZE.

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## THE NATIONAL TEMPERANCE BUREAU EXPLAINS THE PURPOSE OF THE KENYON AND SHEPPARD BILLS.

WASHINGTON, D. C., Feb. 9, 1912.

*Hon. J. H. Beal, Scio, Ohio:*

MY DEAR SIR AND FRIEND—My attention has just been called to an article in the New York Journal of Commerce, under date of February 6th, emanating from the National Wholesale Druggists' Association, and an

editorial in the same paper of February 7th, both pertaining to our interstate commerce bill originally introduced by Congressman Webb, of North Carolina, and now somewhat altered by the addition of Section Two, and introduced in the House by Mr. Sheppard, of Texas, and in the Senate by Mr. Kenyon, of Iowa.

Both these articles are based upon a misapprehension of the bill. I am enclosing you herewith copies of the bills and a statement which was gotten out soon after the introduction of the bills last year, all of which will make the intention plain to you. I think that you will readily see that whoever wrote these articles was either thoroughly deceived about the character of the proposed legislation, or else is attempting to deceive the constituency of the drug trade and the readers of the Journal of Commerce with reference to the scope and policy of these bills. This ought not to go unchallenged and uncorrected, and General Superintendent Baker, who is in the city today and at our legislative offices, has given me your present address so that I could send this data to you with a view of suggesting that you take the matter up directly with the drng people and see that they are set right in this matter.

Of course I should be glad to furnish any further information required, but even if you had not had your large experience as a member of the legislature, I am sure that you would see from the reading of the data sent you that the information contained in this article and editorial is absolutely erroneous. In my judgment even the legitimate liquor trade cannot afford to fight these bills, and assuredly the drug trade of the country cannot afford to oppose measures which are simply directed against the bootleggers and blind tigers of the country and in no wise interfere with the lawful traffic in the different states. Very sincerely yours,

(Signed) EDWIN C. DINWIDDIE,
Legislative Superintendent.

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FEBRUARY 12, 1912.

DEAR DOCTOR DINWIDDIE—I thank you for your communication of February 9, and accompanying copies of the Webb and Sheppard Bills and comments on the same. I will take pleasure in publishing your letter and a copy of the bills in the JOURNAL, the official organ of the American Pharmaceutical Association.

I feel sure I am correct when I say that the large majority of pharmacists do not handle ethyl alcohol or liquids containing it except in a strictly legitimate and proper manner. The profession as a whole would very cheerfully do without ethyl alcohol altogether if it were possible to do so which, unfortunately, it is not. Thus far science has failed to discover anything which can serve as a perfect substitute for alcohol in all cases.

I have not yet had time to consider closely the two bills above referred to, but hope to do so in time for their publication in our March issue, with some brief comments of my own.

With best wishes, I remain,

Sincerely yours,

J. H. BEAL.

## Council Business

### COUNCIL LETTER NO. 12.

PHILADELPHIA, January 26, 1912.

At the Sixth Session of the Council for 1910-11, held August 17, 1911, it was decided that the Council elect a Committee of three to act with a similar committee of the American Medical Association, as a joint committee, to consider and formulate legislation affecting jointly the professions of medicine and pharmacy.

The reports of said joint committee shall be presented to both the A. Ph. A. and the A. M. A., but no formulation of legislation shall be taken as having received the endorsement of either association unless the same shall have been formally approved by resolution. (*A. Ph. A. Bulletin, Nov.*, 1911, 589.)

To simplify the election by mail, each member of the Council is asked to nominate three committeemen, and those receiving the highest number of votes will be declared elected.

The following communication has been received and the request contained therein approved by the Committee on Finance:

*To the Council of the American Pharmaceutical Association*:

WHEREAS, The pharmacists of the public service are joining the American Pharmaceutical Association in considerable numbers, and the work which we have in hand for the advancement of the status of the pharmacists in our public service is much in need of funds for office expenses, such as stenographic work, printing and stamps, and such

expense is now being borne by the Chairman of the Committee.

We therefore move that an appropriation of $250.00, or so much thereof as may be necessary, be made for such expenses of said Committee.

If we understand the matter correctly, over 130 new members of the Association have come in from the U. S. public service alone during the last twelve months, and this appropriation would be less than half of their membership fees for the first year. Other members from the public service are steadily coming in, and we feel sure that it will give the Association pleasure to make this appropriation to further aid in the advancement of the status of pharmacists in our public service. We believe that this appropriation will be to the direct advantage of the Association.

Much of the work that is being done is directly in behalf of the pharmaceutical service of the United States Army, and as the National Guard, under certain conditions and at certain times, becomes an actual part of the United States Army, the advancement of professional recognition of the pharmaceutical service of the army means better professional recognition of the pharmacists by the United States government in practically every community of the United States.

Active work is also being undertaken in behalf of the other branches of the public service. The army is particularly spoken of, as under the provisions of the Dick Bill the pharmacists of the National Guard are largely under the same regulations as the pharmacists of the United States Army.

GEORGE F. PAYNE,
Chairman of Committee on Status of Pharmacists in Government Service.

*Motion No.* 28 (*Approval of Appropriation of* $250 *for Expenses of Committee on Status of Pharmacists in Government Service*). Do you approve of above request for appropriation of $250 for expenses of Committee on Status of Pharmacists in Government Service?

J. W. ENGLAND,
Secretary of the Council.

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## COUNCIL LETTER NO. 13.

PHILADELPHIA, February 10, 1912.

*Motion No.* 25 (*Resolution on Charles E. Dohme*), *No.* 26 (*Charles L. Wright, a Life Member*), *No.* 27 (*Election of Members; applicants Nos.* 82 *to* 127 *inclusive*), *and No.* 28 (*Approval of Appropriation of* $250 *for expenses of Committee on Status of Pharmacists in Government Service*), have each received a majority of affirmative votes.

The request of the Druggists' Circular (Council Letter No. 10, 19) for permission "to publish a commentary on the various formulas contained in the work N. F. somewhat as the authors of the dispensatories have published comments on the text of the Pharmacopœia, and to quote extensively from the book," has evoked discussion.

The following has been received (January 28, 1912), from Thomas D. McElhenie:

"In the matter of the letter of the Druggists' Circular I beg to say, the D. C. is a very reliable and well-edited journal and any comments they would publish would no doubt be correct and helpful. But there are several other good journals, and if the privilege of comment is given to any it should be made free for all journals.

N. A. R. D. Notes has had for a year or two some excellent work in that line on subjects taken at random by the director of the propaganda work, sometimes from the U. S. P. (VIII), and sometimes from the N. F. III.

I think that probably the best way to dispose of the question would be to confine the privilege of comment to our own Journal of the A. Ph. A., and have Dr. Beal run a page or two in each issue or perhaps several pages.

As this privilege was denied to Professor Remington for the U. S. D., it can hardly be made free to journals generally."

Your Secretary then wrote the Druggists' Circular for more specific information as to the extent of text it was desired to be used, adding that if the request as stated be granted it would be possible to publish all the formulas of the N. F. in full, with working directions and comments, and such privilege has been denied the dispensatories in the past.

The following reply was received (February 7, 1912), from the Druggists' Circular:

"We have thought that the Formulary would be more favorably regarded by druggists at large if there were more explanatory matter in its text. In this connection it occurred to us that we might be doing a good part by the druggists, the Formulary and ourselves by reprinting in the Circular the text of the formulas, with perhaps more or less of the accompanying matter, and adding thereto such comments as would make the pharmacy, history, therapeutics, etc., of the formula or preparation clearer to the general reader. We might take up the formulas one after the other and have our comments on them appear in an article to be published as a serial in the Circular. After the publication of this serial the question of reprinting it in book form could be taken up and disposed of separately on its merits. In other words, we propose to do for the text of the Formulary about what has been done in the dispensatories for the Pharmacopœia.

We trust that we have succeeded in making our meaning clear and hold ourselves in readiness to elucidate any point which may

still remain obscure. We thank you for your consideration of us in this matter, and hope that the Council will concur with us in the opinion that such a work as we have in contemplation will be for the general good."

The following letter has been received (February 9, 1912), from Otto Raubenheimer:

"I have carefully considered the request of The Druggists' Circular on p. 19, Council Letter No. 10, and have reached the conclusion that *tnis* and *similar* requests should *not* be granted.

If such a commentary to the N. F. is needed, then I believe it should be published by the A. Pn. A. itself, edited by some of the members and the Chairman of the N. F. Committee, *men who fully understand why the changes were made, men who are fitted to do this work and who do not merely take a guess at it.*

I believe that the new Journal of the A. Ph. A. would be an excellent medium to publish such a commentary in parts in every number.

In view of the fact that the present revision of the N. F. is almost completed, I think it would be well for the Council to adopt rules as to how far the text of the National Formulary can be abstracted by other works and other journals."

There is no motion before the Council on the request of the Druggists' Circular.

The nominations for the committee of three to act with a similar committee of the American Medical Association, to consider and formulate legislation affecting jointly the professions of medicine and pharmacy (C. L. No. 12, 24) have been numerous, and no one has received a majority of affirmative votes; hence it has been thought best to submit a list of the nominees as made, and call for a vote. Some of the members may feel better satisfied to have the list prepared in this way before them when voting. The list of nominees is as follows:

J. H. Beal, G. M. Beringer, C. Caspari, Jr., D. M. R. Culbreth, W. B. Day, E. G. Eberle, J. W. England, J. E. Hancock, H. E. Kalusowski, G. B. Kauffman, F. W. Meissner, J. P. Remington, Wm. S. Richardson, H. H. Rusby, J. C. Wallace, L. L. Walton, H. M. Whelpley, M. I. Wilbert, H. W. Wiley and F. J. Wulling.

Mr. England requests the withdrawal of his name from the list.

Each member of the Council is requested to vote for three committeemen from the above list, and those receiving the highest number of votes will be declared elected.

At the meeting of the Chicago Branch, A. Ph. A., held January 16, 1912, Prof. A. H. Clark was elected as the Branch representative of the Council to succeed C. A. Storer.

*Motion No. 29 (Election of Members).* You are requested to vote on the following applications for membership:

No. 128. Morris Kantor, 489 East 169th St., New York, N. Y., rec. by Henry J. Goeckel and Wm. H. Wilson.

No. 129. Leon Lewis Cypress, 523 E. 138th St., New York, N. Y., rec. by Henry J. Goeckel and Wm. H. Wilson.

No. 130. Jeannot Hostmann, 1122 Hudson St., Hoboken, N. J., rec. by H. V. Arny and H. M. Whelpley.

No. 131. John D. Walton, Sergt. Hosp. Corps, U. S. A., Fort San Pedro, Iloilo, Panay, P. I., rec. by Geo. C. Doran and J. W. England.

No. 132. Peter P. Franklin, Sergt. Hosp. Corps, U. S. Army, Columbus Barracks, O., rec. by L. D. Harp and G. Cushman.

No. 133. Levi Everett Folk, Sergt. Hosp. Corps, U. S. Army, Columbus Barracks, O., rec. by Gabriel Cushman and W. B. Day.

No. 134. Marius Dahl, Sgt. Hosp. Corps, U. S. Army, Columbus Barracks, O., rec. by L. D. Harp and G. Cushman.

No. 135. Eugene L. Maines, 281 Greene Ave., Brooklyn, N. Y., rec. by I. V. Stanley Stanislaus and G. H. Meeker.

No. 136. Quentin Johnstone Barker, Sgt. 1st Cl., H. C., Post Hospital, Fort William McKinley, P. I., rec. by Jasper M. Lawrence and Wm. B. Day.

No. 137. Gust Frankau, Sgt. 1st Cl., H. C., Post Hospital, Fort William McKinley, P. I., rec. by Jasper M. Lawrence and Wm. B. Day.

No. 138. Charles Noel Shaw, Sgt. 1st Cl., H. C., Post Hospital, Fort William McKinley, P. I., rec. by Jasper M. Lawrence and Wm. B. Day.

No. 139. Aaron Freeman, Sgt. 1st Cl., H. C., Manila, P. I., rec. by Jasper M. Lawrence and Wm. B. Day.

No. 140. Edward Oole, Sgt. 1st Cl., Post Hospital, Fort William McKinley, P. I., rec. by Jasper M. Lawrence and Wm. B. Day.

No. 141. John Christopher Wheatcroft, Grayville, Ill., rec. by Wm. B. Day and Clyde M. Snow.

No. 142. Wilhelm Kornmuller, Sgt. Hosp. Corps, U. S. A., Letterman General Hospital, Presidio, San Francisco, Cal., rec. by Wm. D. Barbee and Clark L. Brown.

No. 143. Ludwig Werninghaus, Sgt. Hosp.

Corps, U. S. A., Letterman General Hospital, Presidio, San Francisco, Cal., rec. by Clark L. Brown and Leslie H. Stein.

No. 144. William A. Hickey, 1402 Pendleton Ave., St. Louis, Mo., rec. by Garrett S. Lohmann and J. W. Mackelden.

No. 145. Charles Brunstrom, 601 4th Ave., Moline, Ill., rec. by George W. Sohrbeck and Gus Lindvall.

No. 146. Alfred D'Annunzio, 638 9th Ave., New York, N. Y., rec. by Geo. C. Diekman and Carl P. Wimmer.

No. 147. John Scavo, 316 E. 14th St., New York, N. Y., rec. by Geo. C. Diekman and Carl P. Wimmer.

No. 148. Gustave J. Fonteyne, Sgt. 1st Cl., Hosp. Corps, U. S. Army, Corregidor, P. I., rec. by Wm. B. Day and J. W. England.

No. 149. Romanus A. LaGrindeur, Sgt. 1st Cl., Hosp. Corps, Military Hospital, Camp Connell, Samar, P. I., rec. by Wm. B. Day and J. W. England.

No. 150. Charles Gray Westbrook, Newbern, Tenn., rec. by Wm. R. White and F. L. Smith.

No. 151. Murry K. Pruyn, 1527 N. LaSalle St., Indianapolis, Ind., rec. by E. G. Eberhardt and Francis E. Bibbins.

No. 152. May Strawn, 111 W. 11th Ave., Columbus, Ohio, rec. by J. H. Beal and Geo. B. Kauffman.

No. 153. Frederick Albert Marsh, 327 Fort St., Nelsonville, Ohio, rec. by J. H. Beal and Clair A. Dye.

No. 154. Cyrus West Bowen, M. S., M. D., Broadway and Jackson, Brunswick, Mo., rec. by J. H. Beal and H. M. Whelpley.

No. 155. Warner A. Piel, 1802 Farnam St., Omaha, Neb., rec. by Charles R. Sherman and H. C. Lane.

No. 156. Edward Spease, 89 East Norwich Ave., Columbus, Ohio, rec. by J. H. Beal and Clair A. Dye.

No. 157. Ralph C. Homes, 1619 Summer St., Philadelphia, Pa., rec. by Paul S. Pittenger and Chas. E. Vanderkleed.

No. 158. Alfred Hudiburg, Cor. Main and Center Sts., Turlock, Cal., rec. by Byron F. Dawson and J. H. Beal.

No. 159. Herman Charlton Shuptrine, 229 Congress St., West Savannah, Ga., rec. by H. M. Whelpley and J. W. Mackelden.

No. 160. Charles Hugo Lowe, 761 Amsterdam Ave., New York, N. Y., rec. by Hugh Craig and C. A. Mayo.

No. 161. Charles Ehlers, 225 Calhoun St., Cincinnati, O., rec. by J. H. Beal and F. H. Freericks.

No. 162. Thomas B. Tanner, 7660 Hough Ave., Cleveland, O., rec. by Lewis C. Hopp and E. F. Cook.

No. 163. Robert L. McEnroe, Sgt. 1st Class, H. C., U. S. A., Davao, Mindanao, P. I., rec. by W. B. Day and J. W. England.

J. W. ENGLAND,
Secretary of the Council.

## Obituaries and Memorials

Persons having information of the death of members of the A. Ph. A. are requested to send the same promptly to J. W. England, 415 N. 33d St., Philadelphia, Pa. Information as to the age, activities in pharmacy, family, etc., of the deceased should be as complete as possible. When convenient a cabinet photograph should accompany data.

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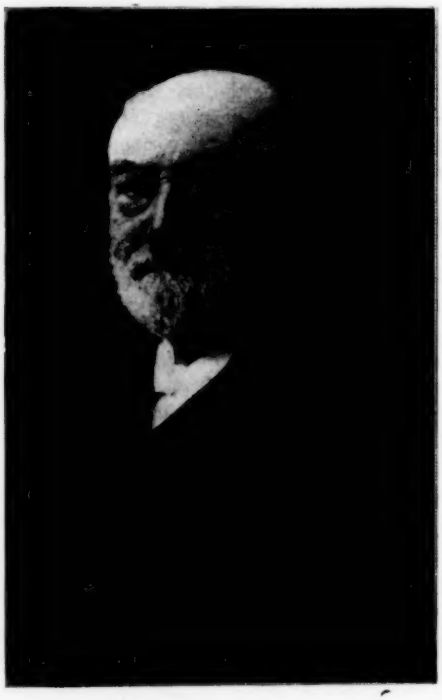

ENNO SANDER.

1822-1912.

Just fifteen days prior to the date of his ninetieth birthday, Enno Sander, Ex-President of the American Pharmaceutical Asso-

ciation, passed into the Great Beyond, after a brief illness.

Dr. Sander had a remarkable history. He was born at the village of Trinum, near Koethen, in Anhalt, Germany, on February 26, 1822, and was the son of Karl Frederick and Emilia (Palm) Sander. His education was obtained in the gymnasia of Zerbst, Eisleben and Koethen, and in the University of Berlin. He graduated from Halle in 1847, and fifty years later received the golden diploma from his Alma Mater.

In 1848, he was a member of the constitutional assembly of his native state, and in 1849 was assistant secretary of war in Baden. He was taken prisoner and sentenced to ten years of solitary confinement for his connection with the Baden revolution, but in 1850 was pardoned and exiled, coming to the United States.

In 1853, he opened a drug store in St. Louis, in 1854 a second, and in 1865 a third.

During the Civil War, he served as major and brigade quartermaster on the staff of Gen. John B. Gray, in St. Louis, Mo.

For thirty years (1865-94) he conducted an analytical laboratory in St. Louis.

He was one of the founders of the St. Louis College of Pharmacy. During 1871-74, he was professor of materia medica and botany, having reorganized the school after it had been closed for two years, and on February 26, 1902, it conferred upon him the title of emeritus professor of materia medica and botany in recognition of his services in the cause of pharmacy and collateral sciences, his eminent qualifications as a teacher and his influence in furthering the systematic study of materia medica as adapted to the needs of pharmacists.

American pharmacy owes Dr. Sander a debt of gratitude for having been largely instrumental in introducing into this country the study of systematic pharmacognosy, the value of which study for pharmacists was recognized at about the same time by two eminent men—Prof. John M. Maisch in the East, and Dr. Enno Sander in the West.

In his eightieth year, he erected a mineral water factory with all the latest improvements and an aerated water still of his own design, the best plant of its kind in the West. It was incorporated in 1894 as the Enno Sander Mineral Waer Co., with Dr. Sandner as president and treasurer. The output included Apollinaris, Bromine, Carlsbad, Sprudel Carbonic, Frederickshall, Kissingen, Arsenated Iron, Garrod Spa, Lithia, Arseniated Lithium, Benzoated Lithium, Seltzer, Vichy, etc. He sold out this large and successful plant on February 1, 1912, but up to this time had given personal attention to its management.

He was an inventor also, patenting a medicine chest (1868), a chemical fire extinguisher (1869), ad an aerated water still (1904).

Dr. Sander became a member of the American Pharmaceutical Association in 1858, being one of the first residents of Missouri to join the Association, the first Missourian to be elected President (1891), and the oldest member in age and service to the organization. He was a member of the St. Louis Academy of Science, having been its recording secretary for one year (1861), and its treasurer for forty-six years (1862-1908), also a member of the Historical and Chemical Societies of St. Louis, the American Medical Association, the Missouri State Pharmaceutical Association, the American Association for the Advancement of Science, the Association of Military Surgeons, the American Academy of Political and Social Science, the Merchants' Exchange of St. Louis, and an honorary member of the Alumni Association of the Maryland College of Pharmacy and of the Alumni Association of the St. Louis College of Pharmacy.

He added to the literature of pharmacy by writing valuable papers on mineral waters and other subjects, and these have been republished in the pharmaceutical journals of the European countries in the original text or translated.

On his eightieth birthday, February 26, 1902, Dr. Sander was tendered a banquet in St. Louis by his many pharmaceutical frieeds, and the occasion was a most memorable one. Ebert, Whelpley, Rohlfing, Meyer, Lamont, Claus, Good and many others paid eloquent tribute to the work and worth of this grand old man, or as he modestly put it "an eighty-year-old bachelor without a relative in the whole country," and letters of congratulations and best wishes were read from pharmaceutical friends of all sections.

Dr. Sander was a man of courtly bearing, high probity, scientific attainments and generous impulses. As Hallberg said ten years ago, "The cycle of time may make Enno Sander an octogenarian, but to me he is the

same urbane gentleman, gallant cavalier, erudite pharmacist, scholar and traveler I have had the pleasure of knowing for nearly a score of years." He devoted himself unselfishly to the happiness of others and lived a useful, well-spent life. What a deep and lasting satisfaction it must be to a man, in the evening of life, as the shadows grow deeper and deeper, to be able to look back upon the years that have passed and gone and recall the happy faces of those whose hearts he has made glad by loving deeds and words of encouragement.

Dr. Sander died at St. Luke's Hospital. Until a month ago, he made his home at the Washington Hotel. The funeral services were held in the Wagoner Chapel on Thursday, February 15, and the body was incinerated. Members and officers of the St. Louis College of Pharmacy and the many other organizations with which he was connected attended the funeral.

Memorial services were held at the St. Louis College of Pharmacy on February 14, and were largely attended, among those present being a delegation fromt the Chicago Veteran Druggists' Association, of which Dr. Sader was an honorary member.

J. W. E.

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## JOHN RICHARDS MAJOR.

John Richards Major, the oldest druggist of Washington, D. C., in time of service, among the retail druggists of this city, died suddenly of angina pectoris on January 28, 1912. He was seventy-four years old, a native of the District of Columbia and had occupied three drug stores in Washington since 1858, all within one city block. He was a charter member of the National College of Pharmacy, which institution held a special meeting on January 29, 1912, and passed appropriate resolutions. He was a life member of the American Pharmaceutical Association, having joined in 1873.

In 1863, Mr. Major was married to Miss Mary Eleanor Thomas, of Alexandria, Va. He is survived by his widow, a son, two daughters and one grandchild.

Personally, Mr. Major was a man of high character and lovable personality. A persistent worker, yet kind and gentle and sympathetic, he inspired confidence and won affection. He was one of the old school of pharmacists, living up to high pharmaceutical ideals, demanding accuracy and absolute cleanliness in work of all those in his service.

He was buried from his late residence, 506 I Street, N. W., on January 30, 1912. The active pallbearers were Lyall Burrows, Murray Hackett, George W. Hurlebaus, and Dr. Virgin, all present or former clerks, and Carl Bostman and Edward Franzoni. J. W. E.

# Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—Resolution adopted at the Boston Convention, 1911.

Reports of the meetings of the Local Branches should be mailed to the editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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## NEW YORK BRANCH.

(January Meeting.)

A regular meeting of the New York Branch was held on the evening of January 8th, beginning at 9:30 o'clock. Acting-Chairman G. C. Diekman presided.

The minutes were read and approved, as was the report of the Treasurer.

The Secretary read the following report of the committee on education and legislation which was approved: "Your committee on education and legislation would respectfully report that at present there are no bills pending in the State legislature of interest to the trade; nor, is there any change in municipal regulations that would require our attention; but there has been submitted to the trade for discussion a tentative decision by the Board of Food and Drugs Inspection covering the importation and sale of crude and manufactured cocaine and opium and its derivatives.

"Our impression is that it is the desire of our association to limit as far as possible the illegitimate use of these preparations without unduly interfering with the use in skillful hands of products for the alleviation of pain

and human suffering. We can see nothing in this tentative draft that would meet with serious objections in the trade, except as to filing declarations as to who the ultimate consumer may be, this being impossible on the part of importers and others.

"There is a proposed amendment to the food and drugs act that was suggested by Representative Richardson, of Alabama, which, if carried into effect, would practically eliminate the sale of many proprietary articles, and its provisions would lead to an immense amount of blackmail. Our opinion is this bill is too sweeping in its character. The step is an ill-advised one and would work hardship and inconvenience to the general public, as well as to manufacturers and pharmacists.

"It must be borne in mind that a medicine containing limited amounts of opium derivatives is not necessarily either a poison or a habit-forming preparation. Limiting the dose might be a wise thing to do, but this amendment should be opposed, because it forms legislation which Congress has refused to enact, and which the Department of Agriculture has no power to make, and because it is unreasonable, unjust and misleading in that it calls a remedy poison and recognizes no distinction in doses, and especially should be modified as to codeine, because codeine is not a habit-forming drug in any sense of the word and is only one-tenth as powerful as morphine.

"Your committee attended a hearing before the commission on combustibles and explosives of Greater New York, and discussed the proposed set of new regulations. The commission was quite ready to adopt suggestions and it is believed that the revised regulations will be satisfactory to the drug trade."

For the committee on the progress of pharmacy, Otto Raubenheimer reviewed briefly the reports of some German analytical laboratories having to do with toilet preparations. He gave abstracts of the following articles: One in which it was suggested that the examination of pharmaceuticals be done in specified chemical laboratories rather than by the pharmacists (Zeit. Ange. Chem.); one in which the author reported that his analyses of liquor-habit "cures" led him to conclude that they were mostly bitters and emetics singly or combined and of little, if any, use (*Pharm. Zeit.*); "The Composition of Bismuth Sub-carbonate," "Alcohol and its Synonyms" and some nostrum analyses (*Pharm. Zent.*); "Quacks and Quackery" (*British Med. Journ.*); "Quack Analyses" (*Journ. A. M. A.*); and "The Stability of Digitalis Preparations" (*Journ. den Pharm.*). Mr. Raubenheimer called attention also to the "List of Important Medicaments" in the Journal of the American Medical Association, and a paper on "Concentrated and Fresh Infusions," by Stephenson (Proceedings, Brit. Pharm. Conf.). He mentioned the approaching Eighth International Congress of Applied Chemistry, several pamphlets from the federal department of agriculture, Knoll's Pharmaka, and the new edition of Hammarsten's Physiological Chemistry.

This report was discussed by Joseph Kahn and Chairman Diekman, and duly received.

C. A. Mayo presented a memorial of the late William Muir, and it was received for insertion in the minutes.

Some discussion of proposed National Formulary formulas followed, in the course of which J. L. Lascoff exhibited samples of a number of the proposed preparations. In connection therewith he said that the most satisfactory kieselguhr for filtering purposes is the sort known as calcined white. This substance gave results much superior to powdered talc as a filtering medium. He had found the formulas proposed for compound elixir of vanillin, elixir of almond, aqueous elixir of glycyrrhiza, and red elixir, quite satisfactory.

Joseph Weinstein told of his difficulty in getting uniform sorts of kieselguhr. He had found the dark-colored kind the best, if it was washed and dried before using. Mr. Weinstein also criticised the nomenclature of several of the proposed formulas as examples of bad Latin construction.

T. D. McElhenie spoke favorably of the prepared cellulose filtering medium suggested by H. A. B. Dunning, of Baltimore.

Mr. Raubenheimer had something to say in favor of the uniformity of cudbear-colored preparations, and of light-colored kieselguhr.

This being the annual meeting, an election of officers was held, and the following were chosen: President, G. C. Diekman; Vice-President, C. D. Bigelow; Treasurer, Joseph Weinstein; Secretary, Hugh Craig; Representative in the Council of the A. Ph. A., T. D. McElhenie; Committee Chairmen; Progress of Pharmacy, Otto Raubenheimer; Education and Legislation, T. P. Cook; Profes-

sional Relations, J. L. Lascoff; and Membership, C. A. Mayo.

HUGH CRAIG, Secretary.

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## NEW YORK BRANCH.

(February Meeting.)

Because of the holiday, the attendance was far from gratifying at the meeting of the New York Branch of the American Pharmaceutical Association held February 12th.

After the report of Treasurer Joseph Weinstein had been read and received, J. L. Lascoff, Chairman of the committee on fraternal relations, made a brief report. Then there was a report for the committee on the progress of pharmacy by Oto Raubenheimer, Chairman. First he spoke of the municipal ordinance prohibiting the sale and use of preparations containing wood naphtha (methyl alcohol), referring in connection therewith to the Berlin poisoning and Dr. Hunt's work relative to the toxicity of wood naphtha. Among the published articles which were reviewed in the report were, one on the adulteration of saffron in Breslau; one on the untoward effect of new remedies; several on poisonous hair dyes; "Honey as a Corrigent for Potassium Iodide" (*Bull. gen. Therap.*); "Preparations of Tar Baths" (*Munch. Med. Woch.*); "Science and Technic in Chemical Industry" (*Zeit. ange. Chem.*); and "Incompatibilities of New Remedies" (*Pharm. Zeit.*). Several letters patent in chemistry were also reviewed.

The report was discussed by Messrs. Mansfield, Arny, De Jonge, Diekman, and Weinstein, and was duly received.

In a paper entitled "A Comparison of Ten Samples of Cudbear," Hugh Craig showed that there was considerable variation in the macroscopic appearance of the powdered cudbear of the market, and an equaly marked variation in coloring powder. The ten samples experimented with had produced six different colors. Mr. Craig exhibited samples of the several lots of cudbear and the respective colored liquids.

The subject introduced in this paper was discussed by Messrs. Arny, Raubenheimer, von Oefele, Lascoff, and De Jonge; and the paper was received with the thanks of the branch.

Cornelius De Jonge exhibited samples of thirty-odd preparatons proposed for admission to the National Formulary. The suggested formulas for these had proved satisfactory with the following exceptions:

*Compound Elixir of Sodium Salicylate*—After standing twenty days this preparation had to be filtered; and had again formed a precipitate at the end of a month.

*Antiseptic Solution of Pepsin*—This clouded and in a short time assumed a pink tinge; seemingly it would not stay clear.

*Liquid Extract of Cinchona*—In the preparation of this an enormous quantity of menstruum was required. A white precipitate formed in the finished product.

*Tincture of Opium with Saffron*—The suggested formula was not workable because the sand-and-drug mass packed so closely that percolation was prevented. With the pharmacopœial method for tincture of opium the result was satisfactory; but the best results followed the use of extract of opium as directed in the British Pharmacopœia.

*Tincture of Cactus*—The process should be modified so as to apply to the drug preserved in alcohol, the usual form on the market.

*Tincture of Fishberry*—Percolation of this preparation is not practicable because of the close sedimentation of the ground drug; maceration is to be favored. The best results therapeutically and commercially were to be had with the following process; mix the ground drug with water and 10 percent. of acetic acid, and boil; allow to cool; add hot water; and boil again. When this liquid has cooled, add 10 percent. of alcohol.

*Tincture of Larkspur*—This preparation was commented upon in the same manner as the foregoing had been.

*Tincture of Sabal and Santal*—Unless 95 percent. alcohol was used as the menstruum there was a settling of a fatty layer in the liquid.

*Salicylated Mixture of Iron*—When the proposed formula was used a precipitate of salicylic acid formed which occupied one-fifth of the bulk of the preparation. By adding ammonium carbonate this precipitate was redissolved, the preparation remaining acid.

*Nebulas*—These were all cloudy, although it was directed to filter but one.

He suggested that the inunction be made in a warmed mortar.

John Roemer had experimented with the proposed formula for *Syrup of Iodo-Tannin* with very unsatisfactory results. A lot of the syrup made as directed contained iodine after being heated for several days, although

the metal was gradually being volatilized. He exhibited a sample of a syrup made as follows: The iodine was powdered and placed in the water over a water-bath; as the mixture was gradually heated, tannic acid was added in divided portions until the iodine was dissolved. More than twice the directed amount of acid was required, yet the syrup on cooling gave a blue coloration with starch; then more acid was added. He could see no reason for the arbitrary amount of iodine specified, or for its being driven off by heating. If the preparation was recognized it would be essential, he said, that provision be made for its assay.

Dr. von Oefele remarked that in the event of the recognition of aromatic solution of pepsin, an assay process for that preparation should be provided.

In a communication read by Secretary Craig, T. D. McElenie commented upon several of the proposed preparations as follows:

*Liquid Petrox*—The formula is satisfactory, the oil of lavender is more than a perfume, as, until it is added, the mixture is turbid.

*Solid Petrox*—Made as directed this preparation is granular and too soft for many uses. The addition of 15 or 20 parts of paraffin to replace oleic acid seemed advisable.

*Iodine Petrox*—The suggested formula was not practicable. The liquid would separate into two almost equal layers, the upper one cherry-red, the lower claret-colored.

Additional comment on the proposed formulas was made by Messrs. Diekman, Weinstein, and Raubenheimer.

Drs. von Oefele and Kessler briefly recounted their work during the past two years in connection with the treatment of carcinoma with selenium. This treatment has recently been exploited by Ehrlich, Wassermann, and others, and Drs. von Oefele and Kessler will relate their observations in detail at the meeting to be held March 11th.

HUGH CRAIG, Secretary.

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## NASHVILLE BRANCH.

The Branch met in regular session January 11th at Furman Hall, Vanderbilt University, with President J. O. Burge in the chair.

The discussion of the new N. F. preparations was postponed until the next meeting and the subject of Emulsions was taken up.

Dr. J. O. Burge read a very interesting paper on this subject which provoked quite a good deal of discussion, in which Dr. E. A. Ruddiman, W. R. White, Dr. J. R. McDaniel and others participated.

Dr. Ruddiman claimed that in emulsions the proportions of gum and water must be definite, while Dr. Burge maintained that the proportion of gum and oil must be definite.

The best preservatives for emulsions were said to be small quantities of alcohol or brandy, 1 oz. to the pint, and chloroform water. W. R. White referred to a method by which benzin and kerosene could be emulsified.

W. R. WHITE, Secretary.

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## DENVER BRANCH.

The January meeting of the Denver Branch of the A. Ph. A. was held Tuesday evening the 16th at the Traffic Club.

President Best called the meeting to order at 8:30 p. m. After the reading and approval of the minutes of the previous meeting the following were elected as officers for 1912:

John Best, President; L. B. Bridaham, First Vice President; C. H. Skinner, Second Vice President; F. W. Nitardy, Secretary-Treasurer.

The by-laws proposed at the last meeting were read for final action and adopted by unanimous vote.

President Best then called on Prof. James Seymour, who exhibited about 200 stereopticon views of medicinal plants which proved a very instructive and interesting entertainment. At the end a few prescriptions were thrown on the screen which caused a general discussion of prescription writing and incompatibilities.

After a vote of thanks to Prof. Seymour the meeting adjourned.

F. W. NITARDY, Secretary.

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## PHILADELPHIA BRANCH.

(January Meeting.)

The regular meeting of the Scientific Section of the Philadelphia Branch of the American Pharmaceutical Association was held January 2, 1912, at the College of Physicians, Chairman C. H LaWall presiding. Owing to a misunderstanding as to the date of the meeting, and a delay on the part of the postal

authorities in the forwarding of the notices, the attendance was rather small.

There being no items of business which required attention, the President called upon the speaker of the evening, Dr. H. C. Wood, Jr., who presented a very interesting and instructive address on the Relation of Chemical Composition to Physiological Action.

The speaker began by saying that in his address he would deal chiefly in generalities rather than with a multiplication of specific facts, so that, while there were exceptions to many of the statements he might make, the facts he would give would be those based on general observations.

By means of a sketch on the blackboard he first pointed out the differences in the functions of the three separate sets of nerves that exist in the human body—the sensory, the vegetative and the motor nerves—and then proceeded to note the effects of the organic compounds, containing in their formulæ various characteristic groups, upon these several kinds of nerves.

The benzene derivatives, generally speaking, act upon the sensory nerves and the pyridine on the efferent nerves.

The germicidal power of phenol is apparently dependent upon the presence of the hydroxyl group in its molecule. All of the disinfectants of this series contain a hydroxyl group, with the single exception of benzoic acid, and in this case the antibacterial power appears to be dependent upon the acidity, for sodium benzoate is not germicidal.

More than one hydroxyl group, however, seems to lessen power, as phenol, resorcinol and pyrogallol form a descending series in potency. The introduction of methyl groups enhances the bactericidal power, as shown by cresol, thymol, etc.

The local anesthetic action of phenol appears to be increased by the introduction of an amido group, at least all of the powerful local anesthetics are compounds of the benzene ring, containing an amido group with an aliphatic radical. The amido group may be in the form of a simple compound or a complex nucleus, as in cocaine.

The pyridine derivatives act on the nerves which lead away from the spinal cord. Those containing oxygen act chiefly on the vegetative nerves—that is the nerves supplying organs necessary for life—while the non-oxygenated derivatives of this series act chiefly upon the nerves of the voluntary muscles. Among the latter, those which contain aliphatic side groups such as coniine are the most powerful. Among the former, the most interesting are the so-called solanaceous alkaloides.

He pointed out the similarity in the structure of tropine and ecgonine, and the similarity in the physiological action of atropine and cocaine. Cocaine has a double effect, both as a benzene derivative upon the sensory nerves, and as a pyridine derivative upon the efferent nerves.

Open-chain (Aliphatic) compounds paralyze brain centres and to a lesser extent the spinal cord. Those containing chlorine have the most active powers. Compounds containing ammonia-like groups are safer and less depressant than those not containing them.

The address was warmly received and the author requested to put it in form of a paper for publication.

C. H. KIMBERLEY, Secretary.

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## PHILADELPHIA BRANCH.

### (February Meeting.)

The Scientific Section of the Philadelphia Branch of the A. Ph. A. was called to order on the evening of February 6th at 8 p. m., Chairman LaWall presiding.

The topic of discussion for the evening was a Symposium on the Inorganic Compounds of the U. S. P. with special reference to Assay and Tests. Chairman LaWall, in introducing the subject, talked upon the great importance of the Inorganics of the U. S. P., both as to the large number of substances included and to the great amount of these materials which enter into actual use. He spoke of the work of the Revision Committee and called attention to the changes to be made in placing the chemical formula in the Rubric instead of under the nomenclature. He also said that the directions for assay would be changed so that about a certain quantity would be accurately weighed instead of requiring, as at present, an exact quantity, and the requirements would be stated in such a way that the calculation of purity could be definitely made rather than requiring a positive amount of reagent to be used, and following this, a statement as to the number of cubic centimeters of standard solution required by one gram of pure material.

Dr. C. E. Smith, in discussing the Inor-

ganics of the present Pharmacopœia, said, in brief, that only tests that are positively reliable should be incorporated in the text, and that with such tests only one or two should be necessary.

He also criticised the present statements which require the absence of certain impurities, inasmuch as many tests are not sufficiently delicate to show minute traces of certain impurities. He also thinks that a definite time should be stated within which the characteristic tests should appear. He also criticised a number of tests such as the Guttzeit and Bettendorf tests, due to the fact that the reagents used may contain a sufficient quantity of arsenic to increase the results of the initial test beyond its proper point, and states that the blank tests made should require a much larger quantity of the chemicals in order to obviate this error. With respect to the Bettendorf test he thinks it very much less delicate than the similar tests of other Pharmacopœias. He further criticised the fact that the limit of impurities is not graded with respect to the use to which the chemical in question is to be put, feeling that what would be a large impurity in one material might be considered as a negligible impurity in another, but the Pharmacopœia requires practically the same purity for both. He also mentioned substances in which the assay methods are unnecessary, since the purity requirements are so high: as examples of which, he mentioned boric acid, mercuric iodide, zinc sulphate, and others. He also called attention to the fact that when water of crystallization is present, the amount of impurity may be overshadowed by the increase in strength due to a partial loss of water of crystallization, and that therefore this matter should always be taken into consideration in testing such chemicals.

Mr. H. B. Meade also discussed the topic of the evening and supported the opinions of the preceding speaker, and further stated that as his opinion it would be sufficient in nearly all cases to merely set a limit to the amount of impurity rather than to require the substances to be free from such impurity. He also says that the grade of chemicals ordinarily supplied to the trade are of such high quality that the requirements of the Pharmacopœia are generally exceeded and that in many instances assays are therefore rather unnecessary.

Mr. J. Rosin spoke relative to the methods of determinations of phosphoric acid and the Sanger-Fisher method of arsenic determination. The latter method he states is sufficiently delicate to determine as small an amount as one-half part per million. He continued his discussion criticising the methods of determining sodium hydroxide and substances of similar nature in which carbonates, etc., may be present, stating that the present methods are inadequate to accurately determine the amount of each present. He also mentioned a number of substances in which a standard of purity is given, but no methods of assaying stated, hence no means provided for the actual proving of such standards.

Others discussed the subject and very much valuable material was brought out.

The subject of the evening for the Branch meeting was purified caramel and the standardization of caramel solution. This subject was taken up by Mr. George M. Beringer and in the discussion which followed this paper very ineresting material was given. It was the best discussion of caramel in its application to pharmacopœial substances that has been produced and should be of much benefit to pharmacists who make use of this substance.

C. H. KIMBERLEY, Secretary.

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## CITY OF WASHINGTON BRANCH.

The regular meeting of the Branch was held at the National College of Pharmacy, January 17, 1912, with President Flemer in the chair.

Samples of most of the preparations proposed for the National Formulary, formulas of which were published in the November issue of the Bulletin, and of Essentia Pepsini, made according to the proposed formula, and several modifications, were presented by Dr. Hilton and Mr. Wilbert, for inspection, discussion, and criticism. Some of the samples were about fifteen months old, while others were very recently prepared.

The first of these preparations to be discussed was Elixir Amygdalæ Amarum. The consensus of opinion regarding this preparation was that the Vanillin odor and taste were overly prominent, producing an undesirable and rather offensive product. Upon motion duly made, and seconded, it was recommended to the Committee on the National

Formulary, that the vanillin be not included in this formula, or if it was deemed essential to have the vanillin therein, that the quantity thereof be reduced at least one-half.

Elixir Trium Bromidorum was then considered. It was generally contended that the National Formulary should not be burdened with this preparation, and others of its kind, as a physician desiring to prescribe a bromide, could readily write a prescription which would meet the individual requirements and necessities of the patient, far better than a stock preparation. Much adverse criticism was indulged in relative to the use of coloring matter in this preparation, it being claimed that this was done merely to make the finished product resemble numerous patent medicines containing bromides which are now on the market. Recommendation was therefor made to the Committee on the National Formulary that this preparation, Elixir Trium Bromidorum, be deleted from the National Formulary, but in the event it was deemed advisable to retain it, that the formula be so revised that no coloring be used.

The sample of Elixir Glycyrrhizæ Aquosum, which was next taken up, was but two months old, yet was in a high state of fermentation, and utterly useless for dispensing. Dr. Hilton explained that this preparation had been carried on a shelf in his laboratory ever since it had been made, and that the average temperature there was but 70 degrees, F. It was suggested that such a preparation would be unsuitable for summer use, and that in view of its instability, it would necessarily have to be freshly made each time it was dispensed. In the presence of other preparations, containing alcohol, its stability would be increased, and under those conditions might make a satisfactory preparation, but it was believed the alcoholic strength should be increased. Severe criticism was made of the use of the word "aquosum" to describe this preparation, contention being made that it was contrary to the meaning of the word "Elixir," as generally accepted by the pharmacists of this country. This part of the discussion lead to the suggestion that a recommendation be made to the Committee on the National Formulary, that a definition for the term Elixir be made a part of that work. Recommendation was also made that the preparation, Elixir Glycyrrhizæ Aquosum, be not included in the National Formulary, but that in the event it be included, its alcoholic strength be increased that a more stable product could be had.

Criticism of Elixir Rubrum was confined to its name exclusively. Recommendation was made that its name be changed to Elixir Aromaticum Rubrum. During the discussion of this preparation, Dr. Kebler suggested that it was not in keeping with the intent of the pure food and drugs act, to assign to a preparation a name suggested by its color only.

Two samples of Elixir Cardamomi Compositum were inspected, one sample having been prepared about fourteen months before while the other was a trifle over two months old. The first was of pleasant odor and taste, while the other had a disagreeable odor and a displeasing taste. Both samples were made from exactly the same ingredients, Dr. Hilton explained, but at different times. He invited attention to the difficulty in securing oil of cardamom for use in making this preparation; and after some further discussion, confined chiefly to the probable uses for this preparation, it was recommended to the Committee on the National Formulary that this preparation be deleted from the National Formulary, because of its small possibilities as a vehicle, the difficulty in securing oil of cardamom, and because of the instability of the finished product.

Elixir Auranti Amari was most severely criticised because of its high alcoholic percentum. Dr. Kebler remarked that it tasted and smelled precisely like some of the samples of Orange Bitters which were recently procured by the Department of Agriculture. Upon motion duly made and seconded, it was recommended that the Committee on the National Formulary not include this preparation in the National Formulary, because of its uselessness and worthlessness, and because of its high alcoholic strength.

Essentia Pepsini, of which many samples were presented, was then taken up for discussion. The samples were of the proposed National Formulary formula, and many modifications thereof. Some samples were clear, of good odor and taste; others were clouded, and of disagreeable odor and taste, while one had decomposed. Some of the samples, it was explained contained varying quantities of the favored flavorings, nutmeg, orange and vanillin. The branch finally recommended a formula championed by Dr. Hilton and Mr. Wilber, with one change, i. e., reduction in the quantity of the Tr. Sweet Orange Peel

from 18 cc. to 15 cc. The change from the use of wine to alcohol was commended. Further recommendation was made that the name of this preparation be changed to "Elixir Pepsini," with Essentia Pepsini and Essence of Pepsin as synonyms.

The merits of kieselguhr as a filtering agent were compared with those of talc. The experience of the members present showed that less than one-half the quantity of the former was required in comparison with the latter, that the finished preparation was clearer, and less liable to precipitation and to the formation of a sediment. It was also found that it was cheaper to use kieselguhr than talc.

A further recommendation was made to the Committee on the National Formulary that saccharin be not used in any preparation in the National Formulary which was to be frequently and periodically taken, in view of (1) the findings of the Referee Board of the Department of Agriculture that its use was detrimental to the health, and (2) the general action taken at the Richmond meeting.

The Secretary was directed to prepare and have printed a form of notification relative to meetings of the Branch, and present voucher to the Treasurer for reimbursement.

HENRY B. FLOYD, Secretary.

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## NEW ENGLAND BRANCH.

The first meeting of the New England Branch of the American Pharmaceutical Association since Prof. Nixon's election as president was held February 14, at Hotel Plaza, Boston.

In calling the meeting Prof. Nixon made it clear that in selecting the subject, Proposed National Formulary Additions, he intended that the pharmacists of New England should have an opportunity to make comments and criticisms that would receive recognition by the committee in charge.

The method of doing this was as follows: James F. Finneran, Fred A. Hubbard, Frank F. Ernst, Albert J. Brunelle, Carlton B. Wheeler and R. Albro Newton were each asked to try out carefully four formulas designated by the president and to bring samples. At the meeting each of these gentlemen were to make a detailed report. Then each person present was invited to give any information he might have as to the manufacture, use and value of the preparation or to offer any suggestion as to its improvement. After this discussion if sufficient evidence had been offered so that a proper verdict could be rendered, then the members were to vote as to whether they would endorse such formula or recommend its rejection and this vote was to be sent to Chairman C. Lewis Diehl as the vote of the Branch.

In order to get a full expression of opinion the members of the Alumni Association of the Massachusetts College of Pharmacy were invited to attend the meeting and take part in the proceedings.

The plan worked to a T and about sixty attended, representing a large number of retail stores and societies.

James F. Finneran reported on:

Tincture Saw Palmetto and Santal.
Compound Gargle of Guaiac.
Aromatic Oil Spray.
Salicylated Mixture of Iron.

He reported trouble with the Iron Mixture and no vote was taken on it. Voted to endorse Aromatic Oil Spray and Compound Guaiac Gargle. Voted to recommend designation of fresh Palmetto Berries in Tincture Palmetto and Santal and to recommend chilling to remove excess of fixed oil.

Carlton B. Wheeler reported on:

Compound Menthol Spray.
Syrup Ammonium Hypophosphite.
Syrup Poppy Capsules.
Lassar's Stronger Resorcin Paste.

Voted to endorse the Spray, Syrup Poppy Capsules and Paste.

Voted to recommend that Syrup Ammonium Hypophosphite be unflavored or if flavored, not with a "synthetic" like Vanillin.

Albert J. Brunelle reported on:

Compound Elixir Vanillin.
Compound Spirit Vanillin.
Elixir Bitter Orange.
Compound Spirit Cardamom.

Voted to recommend in Compound Elixir Vanillin that Spirit Vanillin be reduced one-half, and that the directions for compounding be as follows: Mix liquids except oils (spirit), then triturate oils (spirit) with Kieselguhr and add to mixed liquids in portions, shaking after each addition. Filter.

Voted that above directions apply also to Elixir Bitter Orange, formula for which was

endorsed. Voted to endorse formulas for both Spirits.

Frank F. Ernst reported on:

Compound Elixir Almond.
Aqueous Elixir Licorce.
Elixir Three Bromides.
Antiseptic Solution Pepsin.

Voted to endorse Compound Elixir Almond and Elixir Three Bromides and to recommend rejection of Aqueous Elixir Licorce and Antiseptic Solution Pepsin. It was the unaimous opinion that these latter two were very unsatisfactory from every point of view.

Fred A. Hubbard reported on:

Elixir Formates.
Compound Elixir Formates.
Compound Elixir Cardamom.
Glycerite Lubricans.

No action taken on the Formate Elixirs. Voted to endorse Compound Elixir Cardamom and to recommend that the Spirit be triturated with the Kieselguhr and added to the mixed liquids in portions, then filtering. On suggestion of physicians present it was voted that formula for Lubricating Glycerite be omitted as such preparations were not efficient for the purposes intended.

R. Albro Newton reported on:

Menthol Inunction .
Compound Menthol Inunction.
Compound Elixir Sodium Salicylate.
Aromatic Castor Oil.

Voted to endorse these formulas.

Quite a number of pharmacists have tried all the formulas as they have been published and nearly all say that Kieselguhr or Infusorial Earth is very much better than Talc or the other common powders as a filtering agent.

Voted that at the next meeting each member invite a physician to accompany him and that this vote be incorporated in the notice of the meeting.

The meeting was in many ways the most interesting ever held by the Branch and several new members were enrolled because of it.

R. ALBRO NEWTON, Secretary.

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## PITTSBURG BRANCH.

The Pittsburg Branch of the A. Ph. A. held a meeting on Tuesday evening, February 13th, one of the gratifying features of which was the number of pharmacy students that participated in the proceedings. The following communication was read from Prof. E. Fullerton Cook, of Philadelphia, conveying aluable information.

"On page 4 of January issue of the Western Pennsylvania Retail Druggist, I notice request for information from the N. F. Committee concerning the reason for 'Alcohol 1 cc. in the formula for Compound Spirit Cardamon. This is an error made by the party who copied the formula for the N. F. Bulletin. The ingredient should be, 'Anethol 1 c.c.' The formula is correctly printed in the American Journal of Pharmacy of November, 1911.

"If Compound Elixir of Vanillin is not artificially colored it will darken quickly, due to the action of light upon Vanillin. The Committee thought it best to provide a uniform color from the first. With regard to the keeping quality of the low alcoholic elixirs the presence of oils which possess powerful preventation properties must not be overlooked. The Committee's samples have successfully withstood two, and in some cases, three years of keeping without fermentation."

These explanations from Prof. Cook were greatly appreciated and accepted as satisfactory.

Another interesting communication from Mr. John C. Owsley, Sharon, Pa., was read in reply to information given him from the Question Box of this Branch, covering the manner of combining Agar-Agar with Cascara Sagrada so as to render it practically tasteless. Mr. Owsley said: "For some time past I have sold a preparation known as Regulin, prepared in Germany, and which is nothing more than Agar-Agar treated with some form of Cascara Sagrada, dried, packed in two-ounce containers and retailed for fifty cents. Recently my attention has been called to a cereal on the market which is composed of crushed whole wheat and flaxseed and refailed for twenty-five cents a package."

Dr. Leonard K. Darbaker presented a valuable and instructive paper concerning some "U. S. P. Herbs Used by the Indians" which gave evidence of much patient research, and covered the history of many present-day commonly-used herbs. Dr. Darbaker was awarded an appreciative vote of thanks.

A spirited debate upon the topic "Are Fraternities of Advantage to the Student?" was one of the strong features of the evening

program, and was admirably handled by three students and an alumnus. The affirmative was maintained by A. H. Campbell and W. V. Kerwin; the negative by R. D. Tea and Dr. J. H. Wurdack. The points brought out by the affirmative were: That the quiz, which is a strong feature of every fraternity gathering, was a great advantage; the restraining of weak members from formation of evil habits; the furnishing of harmless amusements in the fraternity house keeps the student from going outside and forming questionable habits; the facilities for comparing notes with fellow students in the same studies; the rule of forbidding the use of liquors in the fraternity house saves many students from the drinking habit; but the best evidence of their good influence is found in the fact that fraternity members are generally among the first in their classes, and when one is found to be deficient in his studies he is found to be a laggard in his fraternity standing as well.

In support of its position the negative contingent claimed that students who fail to become members of a fraternity are given but little consideration by their fellows; that feuds are engendered; that non-members are excluded from participation in athletics and sports; that in class entertainments the nonfrats are ignored; opposing fraternities bring about a spirit of rivalry, not always with good results; one instance was cited in which a young member fell into intemperate habits because of the bad influence of his fellow members; too much entertainment in the fraternity house; too many inducements presented to entice students away from needed study periods; if left to themselves students would be less often tempted to neglect their studies to indulge in frivolous amusements; fraternity boys are often led into the false idea that causes a sense of security in safely emerging from examinations, an error often discovered when it is too late to be mended. The feeling that as fraternity members they will be protected always, and under all circumstances, results in giving both the individual and his fraternity a bad reputation.

Dr. Geo. W. Kutscher followed the debate with a general summing up, during which he took the ground that the fraternity is always a student's best friend, and if he is not a good student, he will never be found to be any honor to his fraternity. He said that the evils pointed out by the negative speakers were due to the natural bent of the individual, and not to his fraternity affiliation. He claimed that instances of betterment in students by their fraternity were far in excess of any isolated instances of the reverse.

The discussion of the proposed new formulas for the National Formulary was then taken up. Dr. Koch suggested that the formula for Elixir Formatum should be amended to read:

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|---|---|
| Potassium Bicarbonate ..... | 60 Gm. |
| Monohydrated Sodium Carbonate ..... | 36 Gm. |
| Formic Acid ..... | 225 c.c. |
| Aromatic Elixir, q. s. ad..... | 1000 c.c. |

It was resolved that the suggestion advanced by Dr. Emanuel that 1 gm. of tragacanth be added to the formula for Gargarysma Guaiac Compound be amended to read that it is the sense of this Branch that 10 percent of tragacanth be added to this formula. Also that the Secretary submit this action to the N. F. Committee.

Dr. Saalbach suggested that for the same reason given for the artificial coloring of Compound Elixir Vanillin, Aromatic Castor Oil should be similarly treated, and it was resolved that such recommendation be made, and that sufficient alkanet root to produce a handsome red color be provided for in the formula for Aromatic Castor Oil.

A number of samples of N. F. preparations were exhibited by the students to whom had been assigned the duty of preparing them, which were found to be quite creditable, and the young men were severally tendered a vote of thanks for their interest in the work. Liquor Pepsini Antisepticus was shown to assume a cloudy appearance upon standing, although perfectly clear when first filtered. Mistura Ferri Salicylatis throws down an ugly precipitate under the N. F. directions for its preparation, and a committee consisting of Drs. Saalbach, Wurdack and Kutscher was appointed to experiment with a view to finding the causes and a means of remedying the condition.

B. E. PRITCHARD, Secretary.

## Changes of Address

**All changes of address of members should be sent to the General Secretary promptly.**

**The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.**

**Both the old and the new address should be given, thus:**

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

**Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.**

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EDWARD BALDWIN,
From 20 Market St., San Francisco, Cal.
To 9 Main St., San Francisco, Cal.

JULIUS A. W. LUCK,
From 313 Second St., The Dalles, Ore.
To Hotel Arcade, Oakland, Cal.

JOSEPH LENGFELD,
From 804 Fillmore St., San Francisco, Cal.
To 1350 Sutter St., San Francisco, Cal.

DERWENTWATER KIRKLAND,
From 32 Spring St., Los Angeles, Cal.
To 606 S. Main St., Los Angeles, Cal.

OSCAR A. BREHLER,
From Pattison Block, Sanger, Cal.
To Rogatto Block, Sanger, Cal.

SIMON L. BRESLER,
From 1115 16th St., Denver, Colo.
To 914 16th St., Denver, Colo.

JOHN T. RILEY, Sgt. H. C., U. S. A.
From 21 M St. N. E., Washington, D. C.
To 1024 8th St., Washington, D. C.

WILLIAM W. HALE,
From 1810 G St. N. W., Washington, D. C.
To 1495 Newton St., N. W., Washington, D. C.

WILLIAM O. LEMASTERS,
From 624 Main St., Akron, O.
To Brookville, Fla., Lock Box 199.

HERMAN FRY,
From 1610 W. North Ave., Chicago, Ill.
To 5050 Kenmore Ave., Chicago, Ill.

MRS. AMANDA S. DRUEHL,
From 2016 Cleveland Ave., Chicago, Ill.
To 623 Alaska St., Chicago, Ill.

RALPH ERSKINE DORLAND,
From 1001 E. Herkinier Ave., Decatur, Ill.
To 1340 Holmes Ave., Springfield, Ill.

J. NEWTON ROE,
From College and Locust St., Valparaiso, Ind.
To College and Jefferson, Valparaiso, Ind.

A. R. WILLIAMS,
From Langer, S. D.
To Lead, S. D.

AMBROSE, HUNSBERGER,
From 415 S. 15th St., Philadelphia, Pa
To 1600 Spruce St., Philadelphia, Pa.

HOWARD GOODWIN,
From 291 Atlantic Ave., Boston, Mass.
To 221 Columbus Ave., Boston, Mass.

WALTER H. VARNUM,
From 1032 New Hampshire St., Lawrence, Kans.
To 801 Massachusetts St., Lawrence, Kans.

CHAS. A. APMEYER,
From Cor. 6th and Vine, Cincinnati, O.
To Wallace and Madison, Covington, Ky.

JOHN T. ELAM,
From Cor. 2d and Elm, Henderson, Ky.
To 110 Ingram St., Henderson, Ky.

HORACE O. HURLEY,
From 2326 3d St., Louisville, Ky.
To 2038 Park Place, Louisville, Ky.

SCHUYLER S. RUST,
From George and Patterson Sts., New Brunswick, N. J.
To 124 Easton Ave., New Brunswick, N. J.

GARRETT V. DILLENBACH,
From 144 State St., Albany, N. Y.
To 111 Delaware Ave., Albany, N. Y.

R. H. TIMMERMAN,
From 600 Park Ave., New York, N. Y.
To 812 Lexington Ave., New York, N. Y.

WILLIAM T. HANKEY,
From 111 Water St., Cleveland, O.
To 1390 W. 9th St., Cleveland, O.

H. J. SHERWOOD,
From 1003 Woodland Ave., Cleveland, O.
To 2064 E. 9th St., Cleveland, O.

J. D. OHL,
From 1101 Ford Ave., Youngstown, O.
To 325 Federal St., Youngstown, O.

R. G. CHAPMAN,
From 3407 Wendelkm St., Dallas, Tex.
To 3019 Colonial Ave., Dallas, Tex.

B. L. MURRAY,
From New York, N. Y. and Merck & Co.
To Rahway, N. J.

CLIFFORD O. MILLER,
From 2623 Maryland Ave., Baltimore, Md.
To 109 N. Carey St., Baltimore, Md.

H. LIONEL MEREDITH,
From 319 Washington St., Hagerstown, Md.
To 456 Summit Ave., Hagerstown, Md.

WILLIAM HALL,
From 177 Griswold St., Detroit, Mich.
To 200-202 Griswold St., Detroit, Mich.

ALBERT LYONS,
From 72 Brainard St., Detroit, Mich.
To 102 Alger Ave., Detroit, Mich.

HORACE R. MACDONALD,
From 219 E. Front St., Traverse City, Mich
To 181 S. Fuller St., Grand Rapids, Mich.

LOUIS REICHERT, JR.,
From Cor. 4th Ave. and 3d St., Carnegie, Pa.
To 1103 People's Bldg., 307 4th Ave., Pittsburg, Pa.

MISS RENNA MAE SMITH,
From 611 Grove St., Ft. Worth, Tex.
To 821 Macon St., Ft. Worth, Tex.

JOHN O. PERRY, Sgt. H. C., U. S. A.
From 344 S. 6th St., Lebanon, Pa.
To Ft. H. G. Wright, N. Y.